THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

THE BUILDER HOUSE, CATHERINE STREET, ALDWYCH, LONDON, WC2

Telephones: Temple Bar 6251-2-3-4

Vol. CXCII June 21, 1957 No. 5960

NEWS SUMMARY

A MEMORIAL SERVICE for the late Sir Ian MacAlister takes place next Friday. p. 1109

THE FOUR-INCH MODULE has unanimously been recommended for use as the basic module. p. 1124

BUCKS CC WORKS COMMITTEE is to take no action on the MoHLG recommendation to secure fixed-price tenders but instead is to continue to ask for fixed-time tenders. p. 1124

BASIC PRICES fell during May for building and civil engineering materials and house building materials. p. 1125

'THERE ARE NO GROUNDS for regarding coal as an outmoded fuel' states the CUC. p. 1140

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HOUSE-BUILDING STANDARDS

THE increasing freedom to build houses for sale which has been one result of the political climate since 1951 has proved, as anticipated, a two-edged weapon. It has enabled people within a wide range of salary scale to buy their own home instead of being dependent on public largesse and official selection; at the same time this growth of speculative development, much of which is without the benefit of architectural design and, equally important, of architectural supervision, is visually, and too frequently structurally, a doubtful asset.

It was with the purpose of improving the standards of construction in speculative house building that in 1936 the National House-Builders' Registration Council was formed. The Council, representative of many interests other than building, came into being at a time when structural standards were, by and large, very low; it established a specification which it invited house-builders to follow; it established an inspectorate which visits and inspects houses which the registered builder puts up; and at completion it issues a certificate which the public is invited to regard as a warranty of high-class building. In an uphill fight over the years to improve the overall quality of speculative house building, the Registration Council—virtually dormant from 1939 to 1951—may fairly claim to have made an encouraging start.

We detect, however, a note of satisfaction in some of the Registration Council's recent pronouncements which facts do not inevitably justify. One such was the statement by the retiring chairman, Mr. G. Langley-Taylor, FRIBA, at the recent 21st anniversary luncheon held in London, that when the time has come that 70 or more per cent of houses privately built are certificated, 'it may then be that easier loan terms will be offered to the purchasers of houses carrying the hall-mark of this Council.' It may be thought that the quality of the houses certificated rather than the mere numbers erected is a better argument for getting improved loan terms. And what is a hall-mark ? In objects made with gold it commonly varies between nine and 22 carats; standards in a house can, and do, vary in at least as great a degree.

This matter of standards is all-important when considering the contribution made by the Registration scheme. The difficulties that can arise when the builder of a certificated house is constructing to one standard and the purchaser is expecting a home built to another (and higher) standard are well illustrated in the case of a house recently completed in Surrey, the subject of correspondence in our columns in April last. Here the complainant, a Mr. Crux, listed a number of defects alleged in a certificated house bought by him (see *The Builder*, April 5, p. 622). The majority of these he alleged to be due not to the growing pains which commonly beset new buildings but to shoddy workmanship, poor materials and low standards of finish.

In considering such cases, the difficulty must always be to arrive at a universally acceptable definition of what constitutes a good standard of construction. In the case under discussion it is of interest to compare the views of different parties on the house:

'Your own particular house was inspected on 10 different occasions during construction . . . I am quite satisfied that your house fully complies with the standards of construction required by this Council . . .' (*letter from the Surveyor to the Registration Council to Mr. Crux, dated April* 18).

'It is the purpose of this Council to ensure a high standard of construction in house-building . . . Here is a case where a high standard has definitely been achieved' (*letter to* 'THE BUILDER' *of April* 26 *from Mr. Norman H. Walls, Director, Registration Council*).

'We would offer our opinion that the house is in general constructed to reasonable speculative standards, but it is our further opinion that the standard of finish is not good . . .' (*from a report by a firm of chartered architects and surveyors, made to the purchaser, dated April* 13).

It may be added that, in response to Mr. Crux's open invitation to accredited persons to inspect the workmanship on the spot, a representative of this newspaper visited the house on April 28, after some of the defects complained of had been put right, and what he saw there would certainly not support the Registration Council's contention that high standards of construction had been achieved.

If we have dealt with this case at some length it is because in our view the matter cuts deeper than the rectifying of defects in an individual house. The Registration Council, as an independent, non-profit-making body has a job to do which, if it were to fail, no one else could take on, the only other remedy—that statutorily speculative houses should be designed and supervised by architects—being locked in the cupboard at the Ministry of Housing and Local Government. But the Registration Council will do both itself and those who buy certificated houses less than justice if it brushes aside complaints such as we have drawn attention to, and can comment (as did the Director in his letter to us of April 28): 'No good purpose is served to the industry by its most important weekly newspaper in publishing such a letter as that of Mr. Crux'. Mr. Walls, in our view, would have done better to have made public then the fact that the Registration Council has found it necessary to introduce a revised specification of structural standards (which will be ready, we understand, in a few weeks' time) and, within recent time, has struck off its register, for failure to build up to the existing specification, the names of no fewer than 40 house-builders.

Wishing the Council well, as we do, in its efforts, we do suggest that in addition to improving its standards of specification and, we shall also hope, of inspection, it will also pay more attention to its public relations. Anything the Council can do to keep the intending purchaser of a certificated house more in the picture as to what the Council is, from where it operates, and what standards it seeks to maintain, would do much to avoid disputes such as the one under discussion.

One further point we think only fair to make. In the case we have referred to, it is likely that relations between builder and purchaser became exacerbated by reason of a claim made by the builder at settlement time for an additional £40 for labour costs, based on a wages award made some months before the contract was signed. It is not suggested that anything improper was done in drawing-up the contract but we gather that it is a not uncommon practice for builders to use a form brought up to date, say, to the end of the previous year. If we are right in so thinking, we commend to the attention of the Federation of Registered House Builders (for this is not a Registration Council matter) that all wage awards operative at the time of signing should be set out in the form so that the purchaser is in no doubt of what he has to pay. Little imagination is required to appreciate that reliance in a contract of this nature on the presence of a fluctuations clause relating to wages increases which have already become operative, can become a fruitful source of argument in which many would find themselves in sympathy with the client.

BUILDERS AT CRICKET.—Our photograph shows the National President (Mr. Leonard A. Walden) sending down the first ball of the annual match between the National Federation XI and the Vitruvians XI. A report of the game is on page 1126

Notes of the Week

The Honours List

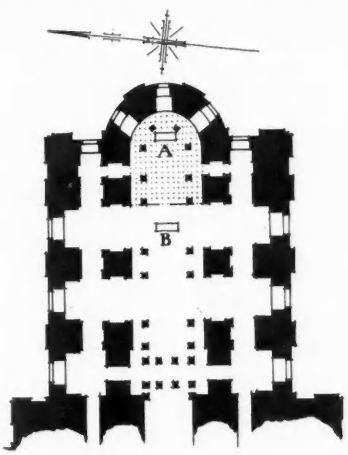
THE Knighthood conferred on Dr. J. Leslie Martin, former Architect to the LCC and now Professor of Architecture in the University of Cambridge, is one only of an interesting list of awards made in the Queen's Birthday Honours announced last week. Dr. Martin's work in continuing the task of raising the standard of LCC architecture, begun by Professor Robert Matthew, plus the anticipation of developments at the Cambridge School, are no doubt reasons for this high honour. No award will give greater satisfaction than the CBE that goes to Mr. Stephen Hudson, a past President of the National Federation and present chairman of the National Joint Council. Mr. B. S. Townroe's work for the Franco-British Society, in which his love of the arts and especially that of architecture has played so large a part, is suitably recognised by his promotion to CBE.

By one of those quirks of fate, the award of the CBE to Grey Wornum appeared on the same morning as the announcement of his death in New York. Fortunately, his reputation as architect and town planner rests on more imperishable foundations, some of which are referred to in a notice elsewhere. Mr. S. C. Foulkes's consistent contribution to good architecture in North Wales is recognised by the OBE as is Mr. Maurice Hellier's work for town planning. The OBE also goes to Lt.-Col. A. C. Newman, VC, director of W. C. French, Ltd., the civil engineering contractors, while the same award is made to several official architects, including Mr. George Ford (assistant chief architect, MoW), and Mr. H. A. Metayers (senior architect, the Home Office). The MBE given to Mrs. W. M. Dance suitably commends her long service to the SPAB and the Georgian Society, as does a similar award the contribution of Mrs. Sheila Pocock as general secretary of the Crafts Centre. Regional officers of the two National Federations also share in the honours, while the unspectacular but valuable work of the Historic Buildings Bureau of the Ministry of Works is recognised in the MBE that goes to its Director, Mr. R. C. Rose. An extended list of recipients is on page 1110.

Ships and Sealing Wax

AN OUTING to Blackheath and Greenwich was so rewarding that I thought a note might be welcome to others, writes Basil Marriott. The present time is particularly ripe, but I hope readers will forgive a relaxed, day-off account of what was a path- rather than a fact-finding visit.

There has always been an enormous sky over the Heath, which makes even unseasonably Aprilish weather dramatic and Hogarthian, and the 18th and 19th century groups and terraces gain by the diminution of scale into convenient 'eyefuls.' I am less happy about some recent developments, seeing (perhaps pessimistically) in them already the seeds of a Stockbroker's neo-Georgian Subtopia, but



CHAPEL OF THE ORDER OF THE BRITISH EMPIRE.—A permanent Chapel in the Crypt of St. Paul's Cathedral is to be dedicated to the use of the Order of the British Empire. The Chapel, the design for which has been prepared by the Surveyor to the Fabric, Lord Mottistone, FRIBA, will be situated round the ancient Altar of St. Faith's, and is to be demarcated by wrought ironwork, with glass panels inset, painted by Brian Thomas who will also be responsible for stained glass windows in the Chapel. Tiles and carpet will be pale grey with rose-pink for soft furnishings, the colours of the Order. The Altar will be silhouetted against a dorsal curtain of gold and silver brocade. Cost is put at £15,000 of which £5,000 has already been given. Members of the Order are asked to make a donation on a suggested scale; details from the Registrar, Order of the British Empire, 8, Buckingham Gate, London, SW1

Mr. C. B. Brown's reconditioning of the Paragon, now on its last lap, is sympathetic and scholarly, and elsewhere rebuilding 'without the copybook' is at least decent.

Greenwich Park is one of our best, and the Observatory almost as enchanting on the level as skylined from below. Apparently some do not yet realise that the Octagon Room is open to the public: there is something particularly endearing about the Tompion clock's works being housed in a small cupboard along with the cleaners' pans and brooms, and about the general *insousiance* of an institution round which the world's timepieces have so long revolved.

'Heart of Oak'

EVEN for landlubbers, the National Maritime Museum itself is a browse of never-failing excitement and interest. Until the end of the year, however, a small loan exhibition deals with the art of designing and building wooden ships, from the end of the 15th to the middle of the 19th century. It consists of models, plans, pictures, books and manuscripts, some shown for the first time. Sources which have supplemented Greenwich's own collection include the British Museum, the Pepysian and the Admiralty Libraries and that of the Institute of Naval Architects. Of the loans, perhaps the most notable is the 17 ft. vellum roll, compiled by Anthony Anthony, of part of Henry VIII's navy.

Incidentally, what accomplished all-rounders the Senior Service must have boasted, judged by the sketch- and note-books of Naval officers. One tends to forget what was owed to them for the documentation of everything from geophysical data to sea-serpents. I couldn't 'make' the opening by Sir Albert Richardson (a very happy choice) and don't know what he said, but gather it was in his happiest vein.

The Cutty Sark

AS ANYONE who has seen (for instance) Copenhagen or Venice will know, sailing ships are the perfect complement to old buildings. Though we must of course await the Royal Opening later this month, the *Cutty Sark* can hardly be concealed—she is immense, even overtopping the cupolas of the Royal Naval College—and one can walk round her at close quarters though not, of course, go aboard yet.

The immortal clipper is re-rigged and sparred, as smart as new paint and gilded 'gingerbread-work,' and the most inspiring sight.

The *Cutty Sark*'s recovery and rehabilitation by the Society formed for the purpose is a triumph of good sense and feeling, and she rides contentedly and with dignity in her last berth, on which a good landscaping job has been done. There are enough setts, bollards and curved steps to fill an issue of the A.R., and the whole ambience cleverly suggests the sort of graving-dock provided for her.

A walk along the river front of the R.N.C. and a drink on the terrace of what remains licensed of the Trafalgar Tavern (now otherwise cut up into some of the most enviable flats in London) completed a sparkling day's enjoyment that I would like to communicate to others.

Sir Ian MacAlister

A MEMORIAL SERVICE for Sir Ian MacAlister will be held at All Soul's Church, Langham-place, London, W1, on Friday, June 28, at 11.30 a.m.

RIBA COUNCIL, 1957 - 1958

Annual Elections

AT a general meeting of the Royal Institute of British Architects, held on Tuesday, June 18, at 66, Portland-place, the results of the annual elections to the Council were made public. Mr. Kenneth M. B. Cross was re-elected President (unopposed). Other members elected, with number of votes cast, were:—

Past Presidents.— C. H. Aslin (Hertford) and A. G. Henderson (Glasgow) (both unopposed).

Fellow Members of Council.—Professor Basil Spence (2,023); Frederick Gibberd (1,661); Hubert Bennett (1,585).

Associate Members of Council.— D. E. E. Gibson (Nottingham) (2,631); Peter F. Shepheard (2,031); S. A. W. Johnson-Marshall (1,338).

Licentiate Member of Council.— G. H. Morris (Coventry) (2,627).

Ordinary Members of Council.— Prof. R. J. Gardner-Medwin (Liverpool) (1,322); H. Durell (Newton Aycliffe) (1,232); P. E. A. Johnson-Marshall (1,199).

BIRTHDAY HONOURS

FOLLOWING is our list of architects, builders and others associated with the industry who received recognition for their services in the Birthday Honours.

KNIGHT BACHELOR

J. L. Martin, V-PRIBA, Professor of Architecture, University of Cambridge.

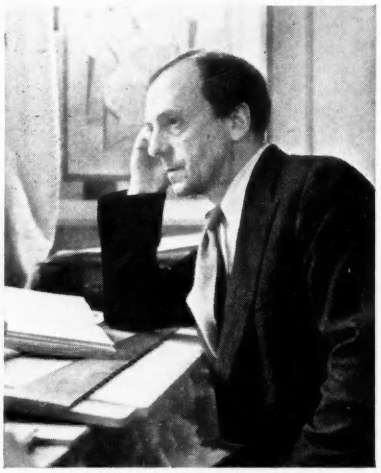
CBE

F. C. Hawkes, OBE, Secretary, Chartered Auctioneers' and Estate Agents' Institute; Stephen Hudson, Director, Robert Hudson and Sons (Contractors), Ltd., Sunderland; J. E. R. G. Kean, Director of Works and Services (Scotland), Ministry of Works; J. G. Pearce, OBE, Director of Research, British Cast Iron Research Association; D. G. Sopwith, Director of Mechanical Engineering Research, DSIR; M. C. Tebbitt, ARIBA, Superintending Architect for Public Works Services, Ministry of Housing and Local Government; B. S. Townroe, OBE, Hon ARIBA, DL, Secretary-General, Franco-British Society; F. H. Woodrow, OBE, Director of Public Works, Tanganyika; G. Grey Wornum, FRIBA (who died before the honour was made known —see page 1115.

OBE

George Ford, FRIBA, Assistant Chief Architect, Ministry of Works; S. C. Foulkes, FRIBA, for services to architecture in Wales; Frank Gardner, Principal, Carlisle Technical College; M. J. Hellier, County Planning Officer, Derbyshire; J. A. McGregor, Burgh Engineer, Surveyor and Planning Officer, Paisley; H. A. Metayers, FRIBA, Senior Architect, Home Office; K. C. Murray, Surveyor of Antiquities, Federation of Nigeria; Lieut.-Col. A. C. Newman, VC, Director, W. and C. French, Ltd., Civil Engineering and Public Works Contractors, Essex; E. V. Walshe, Town Planning Officer, Belfast Corporation; W. E. H. Watkins, consulting engineer and architect, South Wales; Gordon Weston, Technical Director, British Standards Institution.

'All I can say is—if the Albert Bridge was good enough for the Prince Consort it's good enough for me!'



Prof. J. L. Martin, who received a Knighthood in the Birthday Honours

MBE

L. B. Assang, Sanitary Inspector, Trinidad; R. J. Ayers, Assistant County Surveyor, Devon CC; Mrs. W. M. Dance, Sec., Society for the Protection of Ancient Buildings; D. W. Emmott, Reg. Sec. (Yorks), NFBTO; W. J. Green, Clerk of the Works, York Minster; W. R. Payne, lately Clerk of Works, Grade 1, MoW; Mrs. S. M. Pocock, Gen. Sec., Crafts Centre of Great Britain, Hay Hill, London; Herbert Renton, Man., Bldg. Dept., Vickers-Armstrong (Engineers), Ltd., Barrow-in-Furness; R. C. Rose, Director, Historic Buildings Bureau, MoW; Miss E. M. Rutland, First Asst. Sec., RICS; R. P. Sillence, Surveyor, Grade I, Ordnance Survey Office, Southampton; J. H. Turner, Dist. Org., Birmingham Area, Transport and General Workers' Union (Building Group); G. G. L. Tyte, Sen. Struct. Eng., MoW; H. W. Wake, Dir. and Sec., Northern Counties FBTO; A. McKie Ward, Sec., Scottish Engineering Employers' Association.

BEM

J. G. Arundell, bricklayer, SE Division, CEA (Maidstone); John Eckersley, joiner, W. T. Glover and Co., Ltd., Manchester; B. W. Fairweather, mason chargehand, grade 1, Hayles Abbey, Glos., MoW; J. L. Hunter, foreman steel erector, Harland and Wolff, Ltd., Belfast; Nicos Karkaletsos, clerk of works, War Office, Nicosia; T. H. Moody, arch. and civil eng. asst., grade 2, Air Ministry (Waltham Cross); Cecil Steel, sen. foreman of works, HM Prison, Pentonville.

CORRESPONDENCE

Sir Ian MacAlister

To the Editor of *The Builder*

SIR,—As a former member of the RIBA staff who had the privilege of serving under Sir Ian MacAlister during the whole period of his secretaryship, may I add my tribute to the memory of my respected late Chief.

My first contact with him was a chance meeting in 1900 at his home at 20, Hanover-square where his father, the late Sir John MacAlister was secretary of the Royal Society of Medicine and from whom Sir Ian inherited his great organising ability. When Sir Ian was appointed secretary in 1908 to succeed the late W. J. Locke the Board of Architectural Education had not long been formed, and one of Sir Ian's first tasks was to bring about the changes recommended in the reform of the system of architectural education. The advance made in this respect during the last 50 years is only one of the many activities to which Sir Ian devoted his wisdom and foresight—of which much could be written—but I will confine my tribute to the more personal side of his character as revealed by daily intimate contact. As a strict disciplinarian and by his own devotion to hard work he had the ability to inspire his subordinates to a similar devotion. He had no time for the 'slacker' or inefficient, but on the other hand, he was ever ready to encourage, recognise and give credit for good work when it was due.

His understanding and sympathy were a great consolation in times of personal trouble and difficulty and I treasure many letters from him of such a nature. He retained a vivid memory of the many interesting personalities he met during the course of his active life and in latter years he loved to recount incidents and anecdotes of bygone years.

The eminent position to which the RIBA has now attained is a permanent memorial to the wisdom and ability of a great secretary, and I am proud to have had the privilege of serving under him.

F. G. BAKER [Hon. ARIBA].

3, Ederline-avenue, SW16.

Building Surveyors

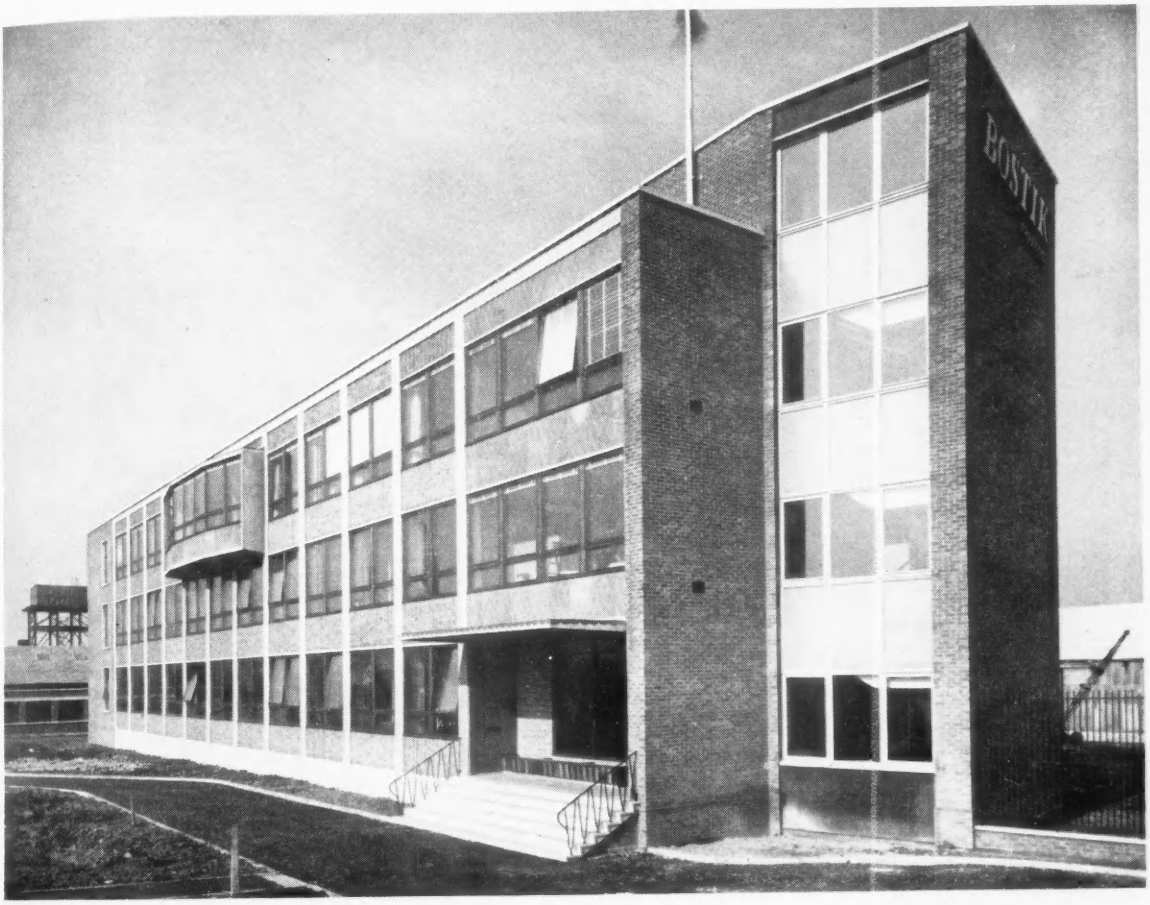
To the Editor of *The Builder*

SIR,—In *The Builder* of June 14, Mr. L. H. Lockley, FRICS, puts a question to Mr. Isted, Secretary of the Incorporated Association of Architects and Surveyors. It read: 'Does he consider that we [the RICS] do not fully represent the profession and deal with his many problems'? (The subject matter of the correspondence was Building Surveyors.)

Architects concerned with construction schemes need the services of a precision surveyor of sites, a man experienced in construction works and their setting out, party walls, new general lines of building, problems of light and air and dimensional relationship, with the variety of other exact dimensional needs both horizontally and vertically in their work; a man accustomed not only to field work but experienced as well in the larger close-fitting construction schemes.

May I respectfully ask Mr. Lockley one question, and this related to his expression 'fully represent.' One is aware of the excellent Land Surveyor and Building Surveyor members of his honoured Institution. If it fully represents the surveying fraternity, has it any register showing Precision Site Surveyors of the nature and experience described? If so, I suggest the architects of the country would like to be informed. If latterly the RICS has been examining candidates in the exacting work of the precise surveyor of construction projects, this knowledge could be helpful to interested students.

GORDON TOMALIN [MIStructE, FIAS].



South elevation

OFFICES, LEICESTER for B.B. Chemical Co., Ltd.

PICK, EVERARD, KEAY & GIMSON, Architects & Consulting Engineers

EDWARD S. ROSE & COOPER, Quantity Surveyors

ROBERT MARRIOTT, Ltd., Builders

THIS new building was designed as the headquarters of the company; to provide working space and ancillary accommodation for administrative and executive staff. Provision has been made for two further storeys and an extension at the rear.

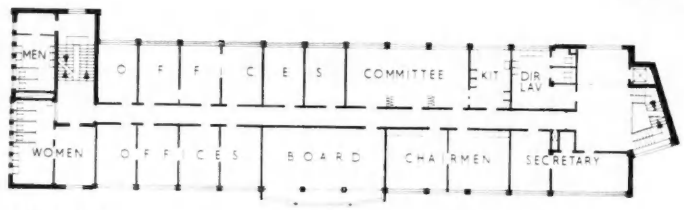
The site is on made-up ground adjacent to the existing factory and offices with the main frontage facing south, and the east side facing the main Leicester to Nottingham railway line.

The building comprises three floors, the ground floor being some 4 ft. above the general site level with a crawlway beneath accommodating the services. The two lower levels were left as open space for subdivision by moveable metal partitioning as required. The second floor was chosen for permanent subdivision for committee rooms, board room and executive offices because of the improved light and reduced sound level. Vertical circulation is concentrated at each end of the block, one staircase and lift forming the main access from the entrance hall, and the other the staff entrance with cloakrooms and lavatories opening from landings. The heating and plenum chambers are concentrated at the west end which is the closest point to the main factory steam supply.

Between the flanking entrances and staircases the building is set out on a 12 ft. bay with a clear span of 40 ft. between walls. The steel frame is concrete cased throughout and all floors are of precast concrete beams.

Main entrance hall

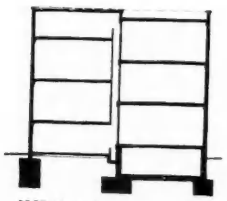
Offices, Leicester



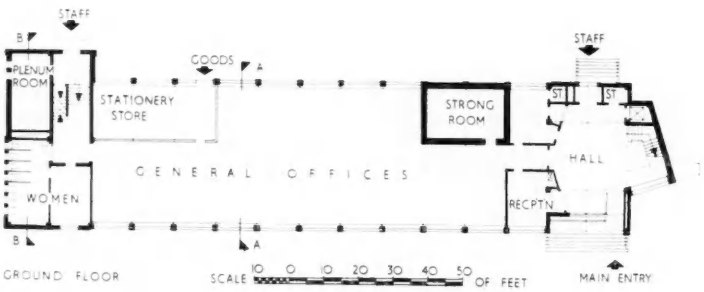
SECOND FLOOR

SECTION AA

FIRST FLOOR

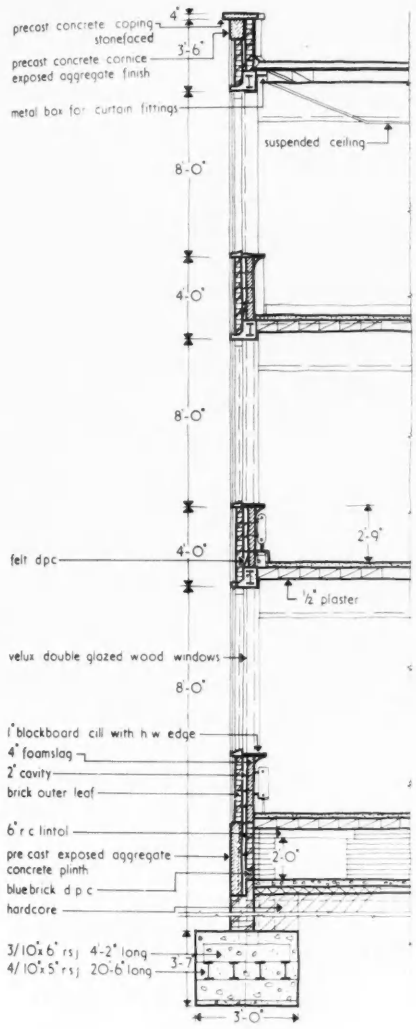


SECTION BB



GROUND FLOOR

PLANS & SECTIONS
Scale : 1 in. = 48 ft.



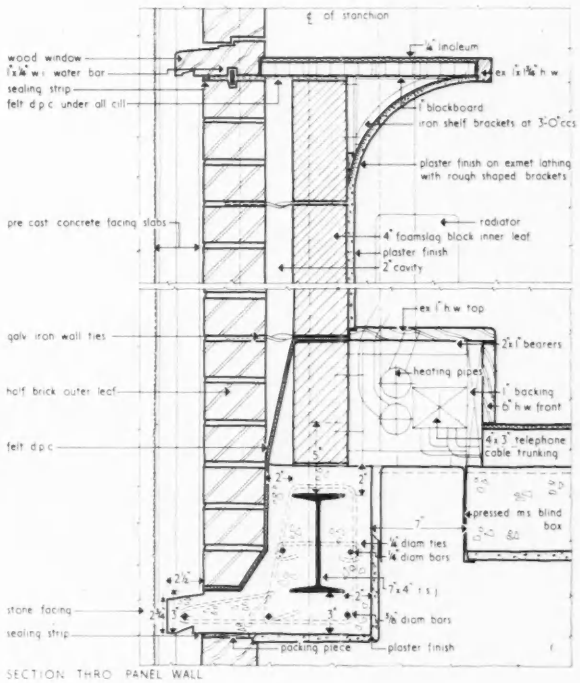
CROSS SECTION

STRUCTURAL DETAIL
Scale: 1 in. = 8 ft.

Main stair-well

General offices on the ground floor

External panel walls are of brickwork between the stanchions which are faced with precast concrete slabs with exposed aggregate finish. With the exception of the main staircase and lavatories which are steel, all windows are hardwood with double glazing. The cantilevered boardroom bay window is faced with Westmorland green slate as are the panels over the main entrance. The return walls to the armour plate doors are covered with polished Derbyshire limestone. Internally, the finishes are generally cork tiled floors, plaster walls and suspended or plaster ceilings. The cloakroom floors and the staircase treads and risers are ceramic tiles.

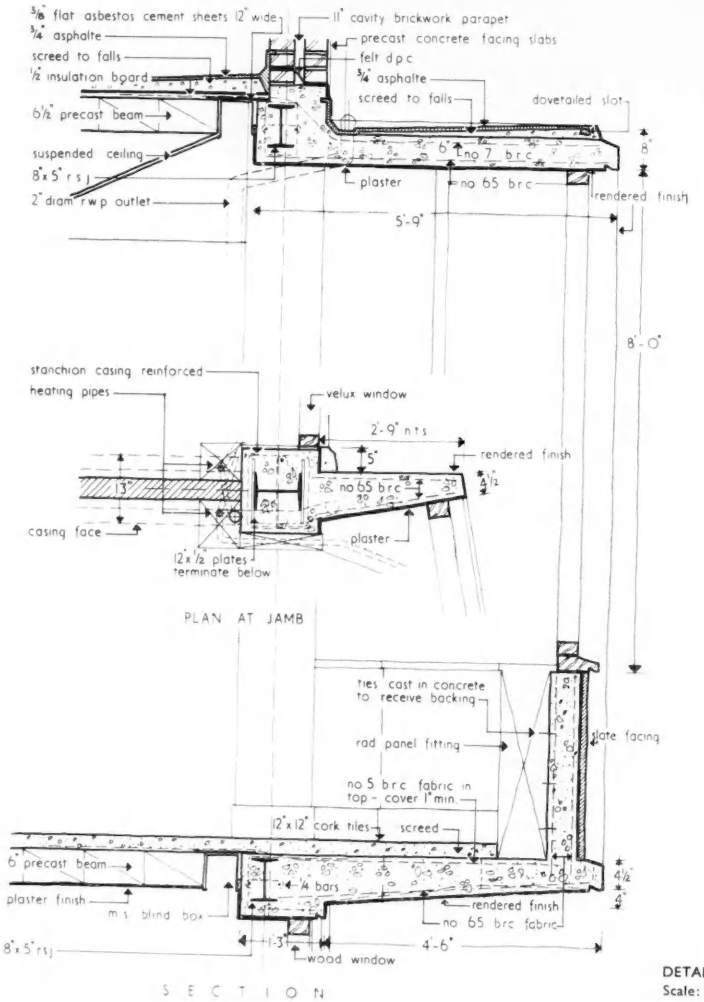


SECTION THRO PANEL WALL

Scale: One twelfth full-size

Offices, Leicester, for B.B. Chemical Co., Ltd.

Boardroom. This is panelled in French walnut, veneered plywood and leather



DETAIL, BOARDROOM WINDOW
Scale: Three-eighths inch to one foot

All services are carried within internal vertical ducts and above suspended ceilings. The building is generally heated by low-pressure hot water, whilst the executive floor has a plenum system.

Fire alarms are of the electrical detector type with a subsidiary system of bell pushes and bells. GPO and internal telephone systems are carried in trunking and conduit in the floor screeds with terminal outlets by the desk positions. A light system is provided for staff location.

The contract period was agreed as twelve months, and the contract value was £111,334.

Subcontractors & Suppliers :—

Structural steelwork, Richards Structural Steel Co. ; precast concrete floor beams, Siegwart Floor Co., Ltd. ; wooden windows, Velux Co., Ltd. ; steel windows, The Crittall Manufacturing Co. ; lift, Evans Lifts, Ltd. : heating, ventilating, hot and cold water supplies, Maddock and Wright, Ltd. ; electrical installations, C. N. Rogers, Ltd. ; natural stonework, Walter Brown and Sons ; reconstructed stonework, Calverley (Concrete), Ltd. ; floor finishes, cork, wood-block and thermoplastic, Hollis Bros., Ltd. : floor finishes, rubber, W. Blackburn and Son (Leicester); metal partitions, Roneo, Ltd. ; fire alarms, Associated Fire Alarms, Ltd. ; venetian blinds, J. Avery and Co., Ltd. : suspended ceilings, A. Wright Tilers, Ltd. ; wall and floor tiling, Byron and Co., Ltd. ; plastering, L. Routhorn and Co., Ltd. ; asphalt roof cover and tanking, Neuchatel Asphalte Co., Ltd.

COMPETITION NEWS

New Housing Development at Leith Fort, Edinburgh

THE Corporation of the City of Edinburgh invite architects, practising or resident in Scotland, whose names are included in the Register of Architects on the last day for submission of designs, to submit in open competition designs for the development of land at and adjoining Leith Fort, Edinburgh, for residential purposes.

Professor J. L. Martin, MA, PhD, (Manchester), FRIBA, has been appointed to act for the promoters as professional adviser in drawing up the conditions of competition and as assessor in adjudicating on the designs submitted. The city architect, Mr. A. Steele, DA (Edin.), ARIBA, FRIAS, will be associated with the assessor in a consultative capacity.

Premiums will be: for the design placed first, 750 gns.; second, 500 gns.; third, 350 gns. The promoters have declared their intention to proceed with the scheme.

Designs must be received by November 30, 1957, addressed to the Town Clerk, City Chambers, Edinburgh, 1.

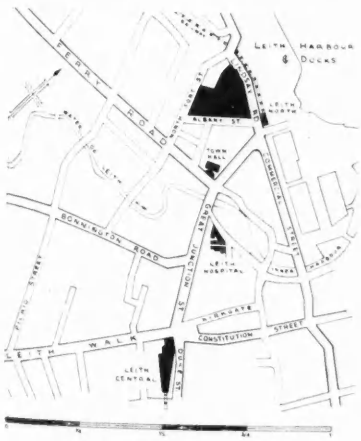
Intending competitors may make inquiries on any points of importance up to July 8, and replies will be sent not later than August 2.

The site has been occupied by a fort and possesses certain features which are of some historical interest. Some of the buildings or features may be retained if the competitor feels that they can reasonably form a part of the scheme. The site is serviced with drainage and water services. It is anticipated that an electric sub-station will be required, and this should be allowed for in the scheme.

The promoters wish to develop the site at a density of 140 persons per acre; for the purpose of uniformity the density is to be calculated on an area of 14.984 acres at an occupancy rate of 3.25 persons per dwelling. Plans and particulars of the site, with copies of conditions of competition and other relative information may be obtained from the Town Clerk on deposit of 2 gns.

All designs are to be based on the requirements of the Department of Health for Scotland, and competitors are referred to Revised Edition (1956), Part III, of the Scottish Housing Handbook, entitled 'House Design.' Competitors should also have regard to the Building Laws of the Corporation. Designs should be accompanied by a report describing the general construction proposed, including foundations, the methods of supplying heating and domestic hot water and detailing the principal materials proposed for the construction and finish of walls, roofs, floors, etc. A statement of the estimated cost of the complete scheme must also be furnished.

Competitors are also asked to have regard to the necessity for creating this development as a 'Smokeless Zone,' and the Corporation desires to limit the erection of aerials for sound and television reception, and competitors are asked to use any method of providing these services which will have the least impact on the scheme's architectural quality.



Leith housing: site plan

OBITUARY

G. Grey Wornum, CBE, FRIBA

THE death last week in New York of Mr. G. Grey Wornum, at the age of 69 (two days before the announcement of his appointment as CBE in the Birthday Honours), though not altogether unexpected, has left many with a sense of shock and loss. No architect of our time was better liked for his personal qualities or more admired for his professional ability. Unfortunately he had suffered in recent years a crippling illness, which he bore with great fortitude. For the benefit of his health he had lived latterly in the West Indies and then in California, but the hoped-for improvement was not to be.

Wornum was born in London in 1888, the son of George Porter Wornum, a doctor of medicine. Educated at Bradfield College, he was articled to the late R. Selden Wornum, FRIBA, studying also at the Architectural Association (where in 1909 he won the travelling studentship and silver medal), and at the Slade School. He began practice in 1910, his first work being a studio for H. G. Riviere. During the 1914-18 war he served with the Artists' Rifles and the Durham Light Infantry, being wounded in the leg and losing his right eye.

Although he carried out a good deal of attractive work in the early years of practice, including reconstruction and decoration of the Palais de Danse, Derby, commercial premises in the City and houses in various parts of the country, it was not until he won the open competition for the new premises of the RIBA in Portland-place in 1932 that he stepped into the front rank of British architects. Though this building has been criticised for some of its features, notably the free-standing decorative columns at the entrance and the sculpture on the Weymouth-street elevation, few have failed to appreciate the essential dignity and simplicity of the exterior or the magnificence of the interior, with its splendid staircase, lecture and exhibition halls. The two

The late Grey Wornum

other works in London by which he is best known are the Central Cleansing and Transport Depot of the City of Westminster, near Ebury Bridge-road, which was awarded a bronze medal of the RIBA in 1939, and the replanning of Parliament Square in 1952, in which year he was awarded the Royal Gold Medal.

In 1936, at the time of the Coronation of King George VI, Wornum had the honour of being selected as one of three architects to design the street decorations of London, his responsibility being for the processional route within the City of Westminster; in the same year he was appointed by the directors of the Cunard White Star Line to design and supervise the decoration of the passenger accommodation of the Queen Elizabeth. Other notable works include the new British Girls' College, Alexandria, Egypt, the convalescent home of the Hearts of Oak Benefit Society, near Broadstairs, and the Earl Haig Homes for Disabled Soldiers at Morden, Surrey. Since 1945 he had carried out, in partnership with Mr. Edward Playne, FRIBA, municipal housing schemes for various London boroughs, and he had also practised on his own account in San Francisco. His design for the extension of the RIBA building and No. 68, Portland-place next door, prepared in collaboration with Mr. Playne, is now under construction.

Wornum was president of the AA in 1930-31, and was a member of the RIBA Council in 1935. He married, in 1923, Miriam Alice Gerstle, of San Francisco, herself an artist and decorator of distinction, and had a son and two daughters. His publications included 'Housing, a European Survey,' for the Building Centre, and 'House out of Factory,' with John Gloag. He was a member of the Arts and the Garrick Clubs.

All Wornum's buildings were imaginative in planning and distinctive in elevational treatment and design of detail, though without any trace of eccentricity. Essentially he was a progressive traditionalist. Had he enjoyed good health in these latter years his output would probably have been greater than it actually was, but there can be no doubt that his executed works give him a high place among the most distinguished architects of our time.

TIMBER FRAME HOUSING

by MARTIN WELLS, ARIBA

Drawings by: J. MARTIN

The ' Trend Budget House ' with two-four bedrooms

IN CANADA and the USA 80 per cent. of house building follows timber frame technique. Despite the high price of timber, frame construction, because it takes less labour, is cheaper and production is consequently higher. Secondly, there is a greater public demand for timber houses. They are warmer, they are much less subject to dry rot and are therefore a lower maintenance liability, while the methods by which they are constructed give greater scope for the higher design standards demanded over there.

The advantages of timber frame construction are just as compelling in Britain as in North America. Some of the more obvious points in favour of the system are:—

1. Rapid construction; a house can be weather-proofed in two or three weeks from the beginning.

2. Less risk of dry rot; in frame construction where all timber is isolated from masonry, and damp-proofed, the usual starting points of dry rot are eliminated.

3. Dry construction; apart from foundations, chimney stack and external brick veneer, if used (all of which are damp-proofed from the rest of the structure), the whole of the construction is a dry process.

4. Insulation; timber framed walls can provide upwards of twice the insulation of 'traditional' brick walls, making it economic to install full heating in a low cost house.

5. Lightweight; there is less foundation load and consequently less risk of failure at this point, particularly in view of the interdependence of the members of the structure.

6. Permanence; provided always that a framed house is well designed and detailed, it is more permanent than 'traditional' construction for the reasons given above. This is an historical fact, not mere supposition.

7. Cost; wherever labour rates are high, the reduction of labour content in frame construction will lower costs. Also, due to the speed with which a house can be closed in, the weather contingency risk is greatly reduced. Hand-powered tools can be used effectively.

8. Simplicity; once the construction sequence is understood, the whole process of fabrication and erection is cleaner and more easily organised than conventional building. If designed for, frames may be factory made and the site work reduced to a bare minimum.

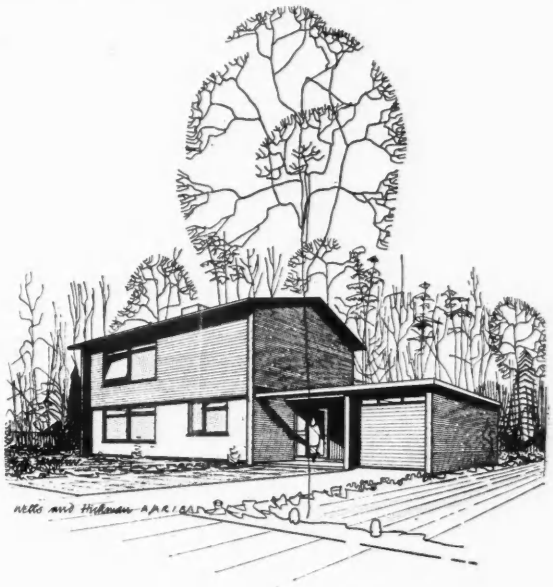
If timber frame construction has such advantages, the main reasons why we are not benefiting from them are:—

First, war-time scarcity of timber; we lost the timber habit and are only slowly regaining it. Timber, however, is now in plentiful supply. Second, timber construction only pays (in terms of direct comparison of costs with 'traditional' construction) when labour costs are high. This ratio has only been favourable to timber construction since the war. Site labour, seen against the background of the comparatively more comfortable conditions of factory employment, is likely to increase in cost, and in future will be scarcer. It follows that timber construction will become increasingly more economic in the new situation. The third factor which in the past re-

stricted timber housing development was the conservatism of building practice. Until the advent of the new model by-laws a large-scale change-over to timber frame construction would have been impossible. The new by-laws, however, make the process a simple one. Yet another factor making for hesitancy among builders was uncertainty about the reactions of the public and the mortgage interests. The difficulty here is that the two interests are interlocked and one cannot be sounded without the other. No certain conclusions could be reached on this point without considerable capital expenditure. The British Columbia Lumber Manufacturers' Association, looking at the problem anew, hit on the 'Trend House,' shown at the Ideal Home Exhibition, as a means of sounding the deep. Backing was forthcoming from the Canadian Government. The reaction of both public and building societies to the demonstration house has been favourable, and interest has been aroused on a scale sufficient to ensure that a strong start will be made.

Three-bedroom terrace houses

A three-bedroom house for a north approach



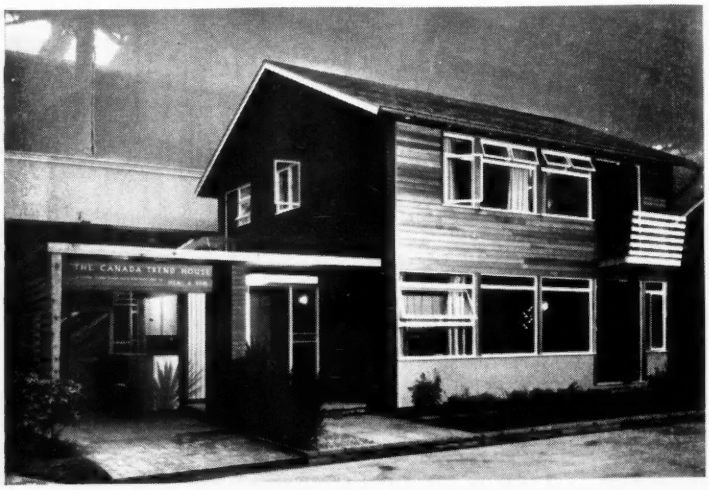
A five-bedroom house with a flat roof

A similar house with pitched roof

How far will the movement go ?

From what has already been said it appears that conditions are now as favourable here as they are in Canada and the United States. At first sight the design factor might seem to make many builders reluctant to change their established and well understood technique. At the outset, more fully detailed drawings than normal will be essential if all the advantages of the system are to be realised. An architect must be engaged to do a good deal more than the usual sketch drawings required to obtain local authority and by-law approval.

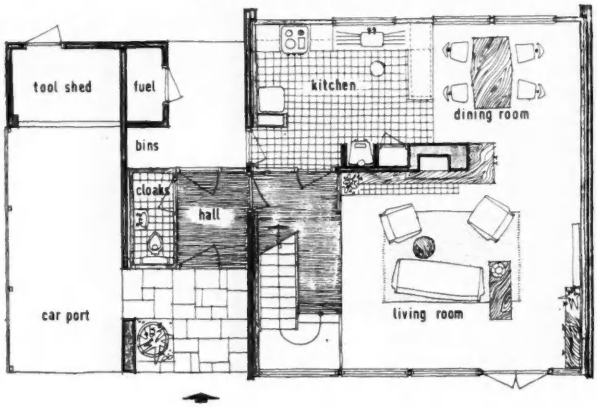
But in any case there is another factor which is compelling builders to increase their outlay on design. The housing field is turning into a buyer's market. With mortgage rates at 6 per cent. the present-day purchaser is more selective.



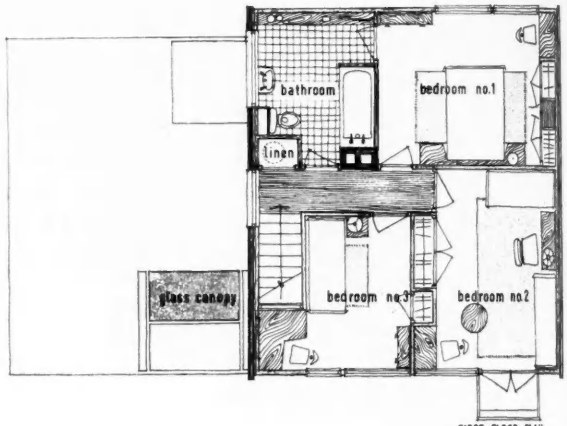
The 'Trend House' as it appeared at the Ideal Home exhibition
The cost of this house would be between £3,000 and £4,000

Timber Housing

This example, designed by Wells & Hickman, was erected at the Ideal Home Exhibition this year, and was sponsored by the British Columbia Lumber Manufacturers' Association and the Canadian Government; built by Heal & Son, Ltd.



GROUND FLOOR PLAN



FIRST FLOOR PLAN

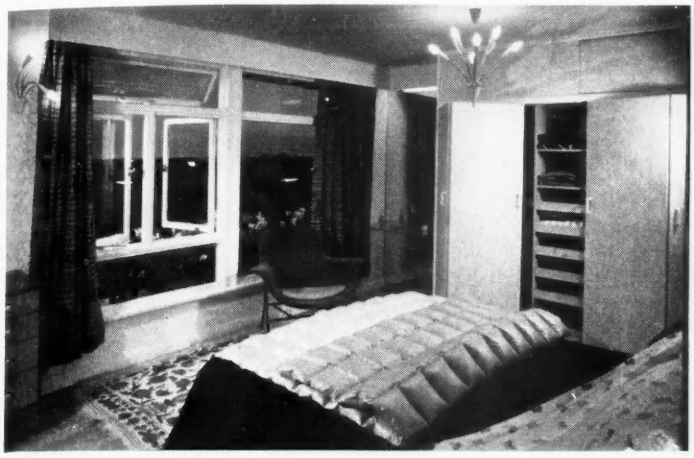
FLOOR PLANS OF THE 'TREND HOUSE'. Scale: 1 in. = 12 ft.

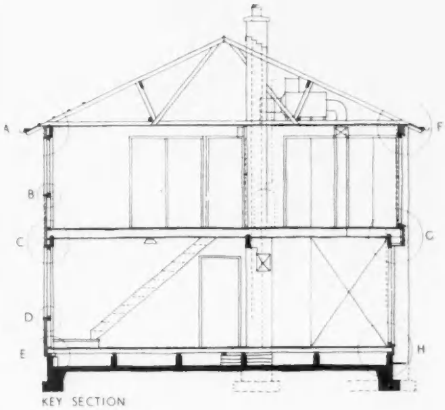
The 'Trend House' as it would appear without garage or lobby

The living-room and main staircase in the house at the exhibition

The ' Trend House ' grouped in pairs

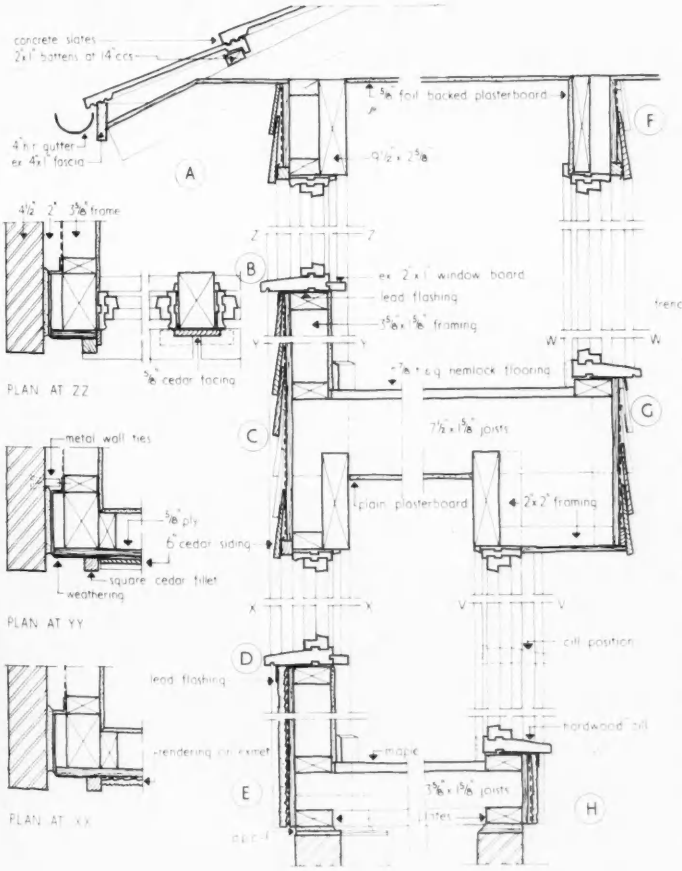
The main bedroom of the ' Trend House '

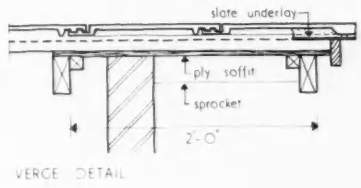




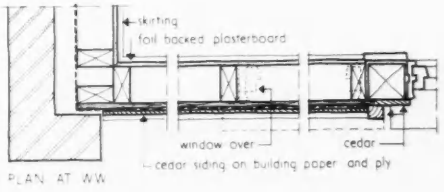
KEY SECTION
Scale : 1 in. = 12 ft.

CONSTRUCTIONAL DETAILS, Scale: One Sixteenth full size

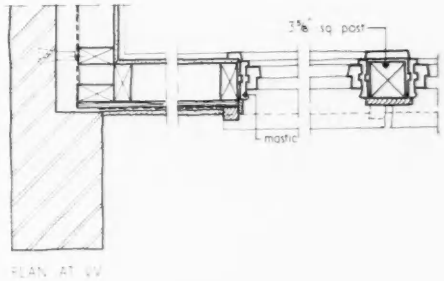




VERGE DETAIL



PLAN AT WW



PLAN AT VV

From the north west

OFFICES AND PAPER WAREHOUSE, Shoreditch

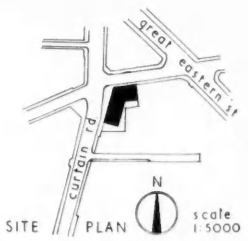
Architects:

J. B. F. COWPER & POOLE, F/ARIBA

Consulting Engineer: R. A. SEFTON JENKINS, BSc, ACGI, MICE, AMIStructE

Quantity Surveyors: ERNEST PASTERFIELD & Partners

Builders: WILLIAM MOSS & Sons, Ltd.



THIS BUILDING, 'DECORA HOUSE,' CURTAIN ROAD, Shoreditch, houses the offices and warehouse of a firm of board and paper merchants, H. Cormacey and Co., Ltd. The shape and the distribution of accommodation in a basement, ground and three upper storeys were partly determined by Town Planning requirements and the projected future development of adjoining sites owned by the clients.

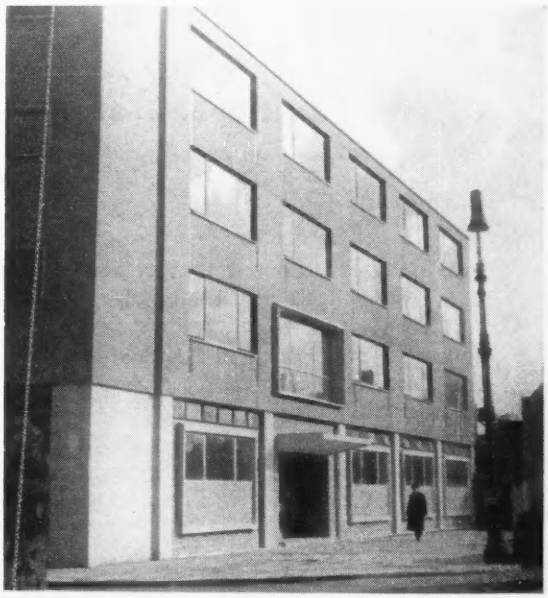
It was a requirement that the structure should allow the storage of paper and boards in a variety of ways and the reinforced concrete frame and floors have been designed to carry a superimposed load of 300 lb. per sq. ft. After an investigation of the subsoil a simple reinforced concrete basement with P.V.C. waterstops in the constructional joints was decided upon and this has proved satisfactory. Both the spacing of columns and the fenestration in the upper storeys were determined by the layout of the storage racks most commonly used.

The walls above first-floor level are facing brickwork of cavity construction with precast concrete slabs with an exposed calcined flint aggregate in panels below the metal windows and on the faces of concrete beams. On the ground storey the columns and walls are faced with artificial Portland stone with dark green *in situ* terrazzo below cill level and at the entrance.

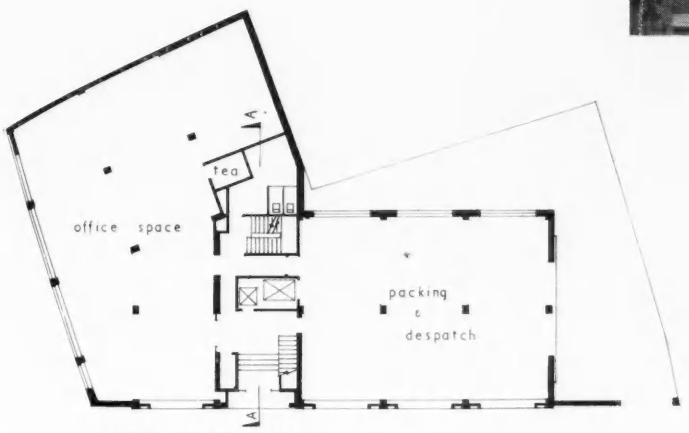
Internally the walls to the storage spaces are of undecorated brickwork with exposed concrete columns, beams and slabs and non-dusting asphalt flooring. The walls to the packing and despatch space are faced with light gault bricks.

The entrance hall, office space and cloakrooms

FIRST FLOOR

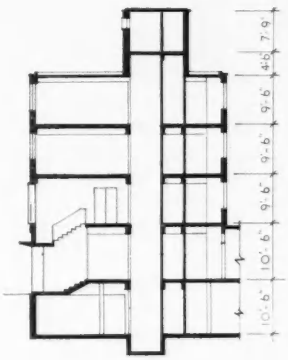


Curtain-road elevation



GROUND FLOOR PLAN

scale 10 5 0 10 20 30 50 feet



SECTION AA

PLANS AND SECTION
Scale: 1 in. = 32 ft.

Detail of the main office entrance and canopy; sliding folding doors to shut off the entrance are stored in a recess to the right of the doorway

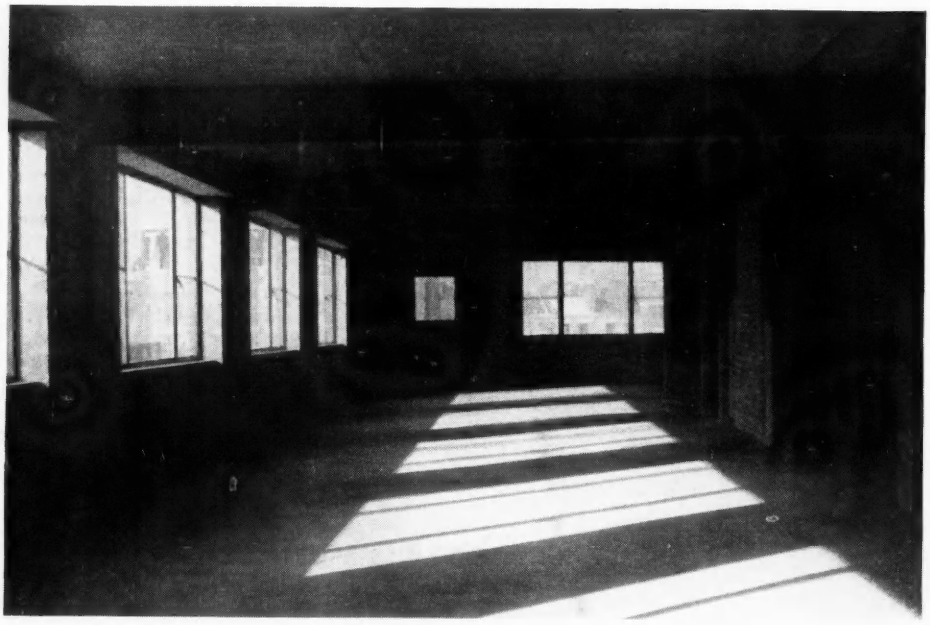
Offices and Paper Warehouse, Shoreditch

have plastered walls and thermoplastic tile floors. The boardroom is panelled in plywood with an Australian walnut veneer, and a similar veneer has been used on the doors in the entrance hall. Both the office space and the boardroom have sound absorbent tile ceilings.

The office space, boardroom and cloakroom are electrically heated. Work on the site began in January, 1956, and the building was completed just over a year later.

Main office entrance

Typical warehouse floor



Subcontractors & Suppliers :—

Electrical installation, Richard Costain, Ltd. ; lifts, Keighley Lifts, Ltd. ; terrazzo, Diespeker & Co., Ltd. ; tiling, Parkinsons (Wall Tiling, Ltd.) ; Accotile floors, Rowan & Boden, Ltd. ; metal windows, The Crittall Manufacturing Co., Ltd. ; metal shutter doors, Potter Rax, Ltd. ; asphalt floors, Val de Travers Asphalte, Ltd. ; precast facings and cills, Enfield Stone Co., Ltd. ; sanitary ware, B. Finch and Co., Ltd. ; roofing, William Briggs and Sons, Ltd. ; sliding door gear, E. Hill Aldam & Co., Ltd. ; strong room door and ventilators, Chatwood Milner, Ltd. ; metal work, Light Steelwork (1925), Ltd. ; ronmongery and gates, A. J. Binns, Ltd. ; facing bricks, Henry J. Greenham (1929), Ltd. ; lettering, The Lettering Centre ; yard paving, Highways Construction, Ltd. ; special light fittings, George Forrest and Son, Ltd. ; rooflights, T. and W. Ide, Ltd. ; sliding folding doors, Holoplast, Ltd. ; veneered plywoods, H. Shawyer and Sons, Ltd. ; patent glazing, Faulkner Greene and Co., Ltd. ; water heater, Aidas Electric, Ltd.

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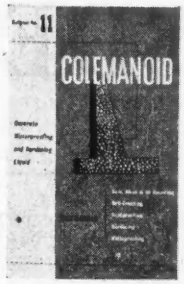
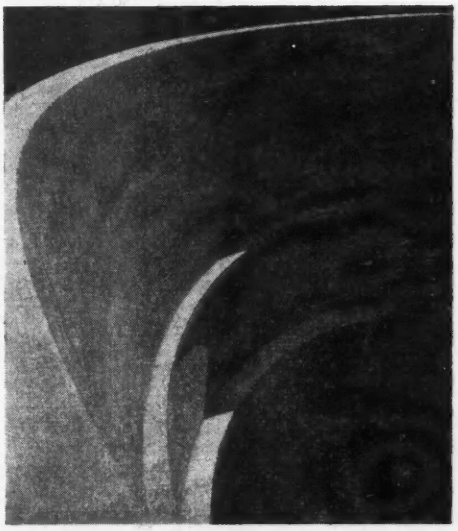
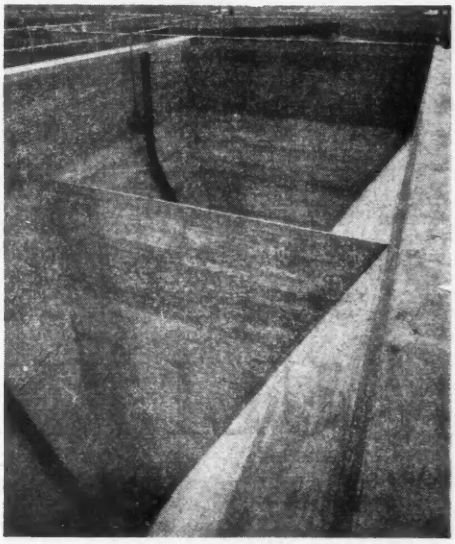


Full details are given in our Technical Bulletin No. 11. We will be pleased to send you a free copy.





Two views of the Merstham Sewage Disposal Works. Borough Engineer: G. G. Sanderson, A.M.I.C.E.

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News of the Week

Canberra Development

SIR WILLIAM HOLFORD, Professor of Town Planning at the University of London, has accepted (as announced in our last issue) a commission from the Commonwealth Government to review the original Burley Griffin design for Canberra, and will recommend a balanced town-planning programme. In making this announcement, the Minister for the Interior and Works, Mr. Fairhall, said that the original Canberra plan had been gazetted in 1925, and although it had been modified in some respects there had been no fundamental departure from the gazetted plan.

'The great expansion,' said Mr. Fairhall, 'that has occurred in the Capital City and its environs—notably in the post-war years—since the Griffin plan was gazetted in 1925, together with planned large-scale developments calling for such major changes as new residential subdivisions, roads, etc., the current traffic problem consequent upon the rapid growth of motor transport, and the fact that Canberra is developing on the outskirts leaving vast undeveloped areas in the centre, emphasise the pressing need for an expert review of its original layout.'

Structural Engineers' Gold Medal

THE Institution of Structural Engineers has awarded this year's Gold Medal to Monsieur Eugène Freyssinet, the eminent French engineer—the first time in its history that the Institution has awarded its Gold Medal to a non-member.

The presentation was made by the president of the Institution, Mr. J. Guthrie Brown, MIStructE, MICE, at a dinner held at the Park Lane Hotel, W1, on June 13. Other eminent French engineers were also guests on this occasion.

M. Freyssinet, who is 75 years old, has been responsible for the design of a great many bridges in prestressed concrete in France and his system is widely used in Great Britain, both for bridges and other important structures.

AA Visit to Berlin

THE ATTENTION of members of the Architectural Association is drawn to the change in date for the AA visit to Berlin which will now take place from August 29 to September 3. An aircraft has been chartered so that numbers are limited, but there are still a few places available. Members interested should contact the Secretary as soon as possible.

TPI Activities

THURSDAY, June 27, will be a busy day for members of the Town Planning Institute, when an afternoon and an evening meeting are to be held at the Livingstone Hall, Broadway, Westminster. At a general meeting at 3.15 p.m. Mr. Lewis Mumford is to be presented with the Institute's Gold Medal for outstanding achievement in the field of town and country planning. The same evening (6 p.m.) Mr. J. M. Fraser, CBE, FRIBA, who is the Trust's manager, will give a paper on 'The Work of the Singapore Improvement Trust.'

COMING EVENTS

MONDAY, JUNE 24.

RIBA.—Annual general meeting of the Library Group. 66, Portland-pl., W1. 6 p.m.

TUESDAY, JUNE 25.

VITREOUS ENAMEL DEVELOPMENT COUNCIL.—'Architectural Application of Vitreous Enamel.' By Mr. E. Mackasek. 'Enamelling Techniques.' By Mr. B. Zick. Building Centre, Store-st., WC1. 4 p.m.

THURSDAY, JUNE 27.

SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.—'The Country House of the 19th Century.' By H. S. Goodhart-Rendel, CBE, MA, P/PRIBA. Victoria and Albert Museum. 6.15 p.m.

TOWN PLANNING INSTITUTE.—Presentation of TPI's Gold Medal to Mr. Lewis Mumford. 3.15 p.m. 'The Work of the Singapore Improvement Trust.' By J. M. Fraser, CBE, FRIBA(M). 6 p.m. Livingstone Hall, Broadway, SW1.

FRIDAY, JUNE 28.

BRITISH TRANSPORT COMMISSION.—Modern Railway Travel Exhibition. Opening by Rt. Hon. Harold Watkinson, MP, Minister of Transport and Civil Aviation. Battersea Goods Depot. Friday 4-9 p.m., Saturday 10 a.m.-9 p.m., Sunday 2-9 p.m. Continuing until June 30.

RIBA.—Memorial Service for Sir Ian MacAlister. All Souls' Church, Langham-pl., W. 11.30 a.m.

Repairing Oxford's Buildings

OXFORD UNIVERSITY has launched an appeal for £1,750,000 to be raised over the next ten years to repair the fabric of University and college buildings. In a letter sent out to graduates, the point is made that £293,000 has already been spent on such repairs over the post-war period, but that the task is proving too great for the Universities and colleges.

City Architect to Retire

THE City Architect for Bristol, Mr. J. Nelson Meredith, FRIBA, is to retire in October of this year.

Appointment Open

LANARK COUNTY COUNCIL invite applications by July 2 for the post of Deputy County Architect for Property Department at Motherwell.

FROM 'THE BUILDER' OF 1857

Saturday, June 20, 1857

REMOVAL OF NOXIOUS TRADES FROM TOWNS.—The suggestion in our columns that a twofold improvement might be effected by the removal of trades prejudicial to health in London, to a distance of at least several miles, so withdrawing also many of the working classes from their close and crowded dwellings to more healthful districts, has met with very favourable consideration by the press. The *Glasgow Gazette*, for example, urges the removal from Glasgow of several objectionable trades which of late have given frequent cause for complaint; and there is no city in the kingdom, we may add, which more requires a thinning (for their own as well as the general benefit) amongst the crowded working classes in its closes, courts and wynds.

FROM AN ARTICLE.

CHARTERED SURVEYORS' ANNUAL CONFERENCE

To be Held at Nottingham

THE Chartered Surveyors' Annual Conference will be held this year at the University of Nottingham from July 16-20. This conference takes the place of the annual summer meetings which have been held by the Royal Institution of Chartered Surveyors for more than 60 years. It is a progressive development in the Institution's activities in keeping with its growth in membership and influence; and it breaks new ground by providing an occasion when chartered surveyors from all over the world can meet to discuss topical questions of land management and development.

The theme for the conference will be the changing British economy and its effect on land ownership and development. The opening address will be given by Viscount Monckton of Brenchley, chairman designate of the Midland Bank, who has been invited to review the changing economic structure of Britain and to point to the effects of this change in land economy. The theme will be developed in a second address by Mr. W. R. Brackett, a past-president of the RICS, who will examine the place of the land owner and developer in the nation's economy and their sociological responsibilities. There will also be ten other papers on a wide variety of matters dealing with the valuation, management and development of land.

In association with the conference, the Institution has inaugurated an annual Gold Medal and a prize of £100 guineas. These awards will be made for a paper chosen to be read at a session of the conference, and the subjects on which papers were invited in 1957 were: (a) Capital formation and land value; (b) Political theory and land ownership; (c) Technical progress and land tenure; (d) The contribution to economic and social development of surveys of land and natural resources.

Papers for the 1957 awards have been received from as far away as Australia. They are now being adjudicated and the name of the winner will be announced about the end of June. The winner will be invited to read his paper on July 19.

Accommodation for the Conference is being provided by the University of Nottingham and members who wish may stay at the University Halls of Residence. The University is housed in modern buildings in a natural setting on the outskirts of the city, and provides the ideal environment for conferences.

During the conference the Institution is also arranging an exhibition which will be housed in the University. The principal exhibits and exhibitors are: (a) Economic Land Development (Ministry of Housing and Local Government). (b) Cost Research (RICS Cost Research Panel). (c) Progress in a New Town (Hemel Hempstead Development Corporation). (d) Farm Buildings and Equipment (Ministry of Agriculture, Fisheries and Food). (e) Land Records (Ministry of Housing and Local Government). (f) Contemporary Survey and Mapping Methods (Ordnance Survey). (g) Surveying Instruments and Equipment.

The Exhibition will be open to the public at stated times.

BUCKS CC TENDERS

Concentration on Policy of 'Fixed-Time' Tenders

BUCKINGHAMSHIRE County Works Committee has accepted a report prepared by Mr. S. W. Lord, its chairman, and by the County Architect, Mr. Frederick B. Pooley, FRIBA, AMTPI, on the Ministry of Housing and Local Government's recommendation that local authorities should let future contracts on a fixed price basis for building and civil engineering work of which the estimated contract period is not more than two years.

The report recommended that the committee should follow and further develop the practice the County Council has adopted for the past year in securing competitive tenders on the basis of a fixed contract time 'and that no action be taken at the present time' on the Ministry's suggestion for requiring fixed-price contracts.

Text of Report

The text of the report is:

The Government proposal to revert to the pre-war practice of requiring fixed price tenders for building contracts is an interesting experiment. There are, however, obvious disadvantages, the chief of which will be the tendency by contractors to estimate generously the increased cost of labour and materials during the period of the proposed contract and to include this amount in their tender. They can hardly be blamed for doing this during the present round of wage claims and rises in transport charges.

The Ministry have estimated that two per cent. is likely to be the average increase in prices during the period of their contracts, but in our view it is likely that contractors will add between three per cent, and five per cent. to their fixed price tenders to guard against this contingency. The building owner will have to pay this extra whether prices rise or not.

The financial effect of the new policy could be ascertained immediately if the Ministry of Works would be prepared to invite both fixed price tenders and tenders subject to the usual rise and fall clause for the same contract. The results of these tenders would be of considerable public interest.

Overall Efficiency

Fixed price tendering itself does little to improve the over-all efficiency of the building industry. It would still be possible in a period of stable prices for a builder with a fixed price contract to let a job run beyond the contract period if he has other work which is more remunerative to him. In our view, efforts to stabilise building costs should be linked with those to increase the efficiency of the building industry. This could be done by producing fixed time contracts providing effective completion dates and penalty clauses.

A good deal of the present efficiency in the industry is encouraged by the clauses in the standard form of building contract which give contractors the right of an extension of time where labour and materials are in short supply. These clauses, introduced as a wartime measure, have become the bugbear of post-war contracting; they have encouraged contractors to oversell their capacity and to become lethargic knowing that the building owner could do nothing about it.

A standard form of building contract which barred a contractor from claiming an extension of time for shortage of labour and materials would ensure that only contractors with the capacity for carrying out the works on time would tender for them. This would give builders the necessary incentive to build efficiently and it would automatically limit the amount of increased cost a building owner would have to pay.

From experience in Bucks there is no difficulty at all in obtaining competitive tenders where the standard form of RIBA contract has been modified so as to provide for an effective 'fixed contract time' by the deletion of clause 18(a). It is, of course, essential where the contract is so modified that the job should be preplanned to enable the contractor to order at the outset all the materials which are required, and for him to have at the time of signing his contract the complete working drawings and other information required for the completion of the works. It is also essential if the revised form of contract is to be made to work effectively for the number of nominated subcontractors to be kept to a bare minimum so that more and more of the work is left in the contractor's hands.

Councils call for Fixed Prices

Merthyr Tydfil and Macclesfield are among local authorities which advertise elsewhere in this issue for housing works on a fixed-price basis.

FUTURE OF COVENT GARDEN MARKET

Recommendations from Westminster Council

WESTMINSTER City Council considered proposals for the improvement, and possibly the removal of Covent Garden Market made by the Runciman Committee at a meeting on June 20. General approval of the main proposals has been recommended by the General Purposes Committee of the council.

The council was asked to reaffirm the conclusion to which it came in 1950, which, in principle, favoured the removal of Covent Garden Market but emphasised that this could only be achieved in pursuit of a long-term policy, involving large, complex and expensive problems. Meanwhile it was proposed that the immediate need for mitigation of the traffic congestion in the area be considered.

The committee felt that traders were being discouraged from making improvements because of the uncertainty of the market's future, and urged that a statement by the Government should be made as soon as possible indicating long-term plans as well as immediate and interim proposals.

In supporting the proposal to improve existing and establishing new markets for horticultural produce so that the volume of goods and vehicles now using Covent Garden could be reduced, the committee states, 'We are not able to suggest which existing markets or what sites for new markets are likely to prove most suitable for this purpose'.

The Committee also recommended that their action in conveying the contents of the report to the Minister of Agriculture, Fisheries and Food be approved.

The Four-inch Module

International Agreement Reached

AT a meeting in Paris on June 3-4 a sub-committee of the International Organisation for Standardisation (ISO) reached unanimous agreement as to the size of basic module and its use in the co-ordination of sizes of building components. The basic module recommended is 4 in. for countries using the inch system of measurement and 10 cm. for metric countries.

The meeting was attended by delegates from 15 countries and observers from a number of international building organisations. The United Kingdom team of six was led by Mr. P. Cutbush (head of the British Standards Institution's building division) and consisted of Mr. W. A. Allen (Superintendent Architect of the Building Research Station), Mr. C. B. Oddie (Ministry of Education architect), Mr. Mark Hartland Thomas (secretary of the Modular Society) and Mr. Bruce Martin (head of BSI's modular co-ordination studies). The United Kingdom delegates were able fully to support the sub-committee's recommendation in view of the recent agreement between the Modular Society, BSI and the Building Research Station when it was decided to take 4 in. as the basis for component sizes, subject to the existing sizes of bricks remaining unaltered. The sub-committee has set up three working groups to draft further international recommendations on (1) a glossary of modular co-ordination terms, (2) a system of tolerances and (3) methods for selection of sizes for modular components.

Parent Committee's Work

The discussions of the sub-committee reported above were followed by a meeting of ISO's main committee on building construction. This main committee agreed to submit the new modular co-ordination proposal to all 39 member-countries of ISO for their comments and approval before it is issued as an ISO recommendation. The main committee initiated work on a glossary of terms having general application in the building industry, but excluding those relating to particular materials and trades. Further sub-committees are being set up to draft proposals on technical drawings (including symbols) for building construction and on a general system of tolerances for the building industry. An effort is to be made to unify the 'handing' of doors and windows; at present there is much confusion between and within countries as to the use of the terms 'left-hand' and 'right-hand' depending on the manner in which the door opening is viewed.

New Council Members

The Natural Asphalte Mine-Owners' and Manufacturers' Council announces that the following five companies have now become members of the Council: The Lawford Asphalte Co., Ltd.; Northern Asphalte and Roofing Works Co., Ltd.; The Scottish Speedwell Co., Ltd.; Tunstalls Seyssel and Limmer Rock Asphalte Co., Ltd.; Messrs. W. G. Walker and Sons (Edinburgh), Ltd.

ARCUK

101st Ordinary Meeting

THE 101st ordinary meeting of the Architects' Registration Council of the United Kingdom was held on June 14 at 66, Portland-place, W1. Mr. H. V. Lobb, CBE, FRIBA, was in the chair.

During the meeting approval was given for admission to the register of 257 applicants, 251 of whom had qualified by examination under Section 6(1)(c) of the Principal Act and the remainder under Section 6(1)(d) of the Principal Act and under Regulation 26(a)(3), architects resigned—seeking readmission. The number of applications under Regulation 26(b) was 35, of which 10 were admitted, 24 rejected and one withdrawn. It was reported that the Admission Committee had re-elected Mr. Vincent Burr chairman and Mr. W. R. Howard vice-chairman for the year.

The Council noted changes in the membership of the Board of Architectural Education. They were: The appointment of Miss M. Marsh, BA, by the Workers' Educational Association; the appointment of Mr. J. Brandon-Jones, ARIBA, AADipl, as president of the Architectural Association in place of Mr. Gontran Goulden, TD, ARIBA; the appointment of Mr. J. Needham, Dipl. Arch. (Leeds), FRIBA, by the schools of architecture in place of Professor S. Welsh, FRIBA, as from October 1.

Scholarships Awarded

The report of the Board of Architectural Education, which was adopted, recommended the award of 16 new scholarships for the year 1957/8, to the following:—

W. A. Cassidy, to attend the Bartlett School of Architecture, University of London; N. T. Green, to attend the School of Architecture, Oxford; R. H. Love, to attend the School of Architecture, King's College, Newcastle-upon-Tyne; M. P. Macrae, to attend the Bartlett School of Architecture, University of London; G. H. Mann, to attend the Liverpool School of Architecture, University of Liverpool; B. R. Martin, to attend the Manchester University School of Architecture; R. M. M. Nisbet, to attend the Aberdeen School of Architecture; R. Peters, to attend the Bartlett School of Architecture, University of London; W. F. Reid, to attend Leeds School of Architecture; Janet M. Shepherd, to attend the Department of Architecture, Sheffield University; A. J. Strong, to attend the School of Architecture, Leicester; D. C. Thomas, to attend the School of Architecture, Oxford; K. A. Walton, to attend the Liverpool School of Architecture, University of Liverpool; M. S. Webster, to attend the Aberdeen School of Architecture; P. Wharton to attend the Nottingham School of Architecture; J. P. Wilkinson, to attend the School of Architecture, King's College, Newcastle-upon-Tyne.

It was reported by the Board that they had appointed Mr. R. E. Enthoven, chairman for the following year and Mr. D. H. Beaty-Pownall, vice-chairman. Both were also appointed ex-officio members of the General Purposes Committee as chairman and vice-chairman respectively. Committee members were Dr. F. F. C. Curtis, Dr. A. S. M. Symons; Messrs. D. L. Bridgewater, A. D. Jones, F. E. Green, R. J. Howrie, E. D. Mills, D. W. Notley, M. Pattrick, R. J. Potter, E. W. Maynard Potts, C. S. White.

The Finance and General Purposes Committee report, which was duly adopted, stated that the committee had re-elected Mr. Cecil Kennard as chairman and Mr. J. K. Hicks vice-chairman for the year. It was also reported that a Premises Sub-Committee had been appointed as follows: Messrs. D. H. Beaty-Pownall, J. K. Hicks, C. Kennard, H. V. Lobb, W. H. Scanlan.

Retention Fees

On the payment of retention fees the committee reported that up to May 24, 2,377 were unpaid and in nine cases payment of 10s. only had been received. The corresponding figures last year were 3,074 unpaid and 23 of only 10s. paid. In accordance with the Council's instructions on March 15, 1957, the names of 24 architects were removed from the Register on April 1 for non-payment of their 1957 retention fees.

The Professional Purposes Committee, in their report, stated that they had considered a complaint that a firm of paint manufacturers are affixing to touting letters a label as follows: 'At the request of ——, LRIBA, AMIMunE, Chartered Architect,' followed by his address and telephone number and the words: 'Member City and Borough Architects' Society, Colour Consultant.' The architect was being informed that the affix 'LRIBA' and the words 'Chartered Architect' should be removed. He had already been directed by the Borough Architects' Society to delete any reference to that body. As he was not practising as an architect he is not infringing Example (i) of Principle VII of the Code of Conduct.

The committee had considered a further complaint concerning an article in the *Evening News* containing a biographical paragraph on an architect who had designed a house for the Festival of Women Exhibition at Wembley. The architect was being informed that the committee considered that architects should insist on seeing a proof before publication of articles in the lay or technical Press describing their work or practice, to ensure that they complied with the spirit of the Code and were not ostentatious.

A complaint also under consideration concerned an advertisement in *The Times* by an architect, of offices to be let, applicants being invited to apply to the architect. He had informed the committee that the property in question was his own personal property and investment but that in future advertisements he would state that applications should be sent to the resident caretaker.

BOOK

HOUSE MAINTENANCE FOR THE INTELLIGENT OWNER. By Eric Bird, MBE, MC, ARIBA. (London: Adam and Charles Black.) Price 15s. net.

THIS is neither a 'do-it-yourself' handbook nor a treatise on building construction; it is a practical manual for the ordinary houseowner who takes an intelligent interest in the design, functioning and maintenance of his property. The author, Mr. Eric Bird, lately editor of *The RIBA Journal* and now technical education officer at the Building Centre, goes briefly but systematically into the construction and equipment of a house, describing in simple, non-technical language the materials of which it can be built, the nature and working of its mechanical installations, the potential failings of its various parts and the appropriate cures to be applied. He shows also how the comfort, convenience and efficiency of old houses can be improved by the fitting of up-to-date apparatus, the insulation of walls and ceilings, by alterations and extensions, and so forth.

The thoroughness of the survey is shown by the following chapter headings: House Construction in General; Roof Coverings; External Walls; Timberwork; Partitions, Plaster, and Solid Floors; Joinery and Metal Windows; The Cold-Water System; The Hot-Water system; The Electrical and Gas Installations; Warming and Insulation; Drains; Paintwork and Decorations; Legal Aspects; Nuisances and Pests; Home Safety and Fire Precautions; and Alterations, Extensions and Improvements. The text is accompanied by 50 excellent diagrammatic illustrations.

Mr. Bird is no advocate of 'do-it-yourself' except in respect of simple things involving little technical skill and no danger to structure or person. He strongly warns against amateur tampering with things not properly understood, and suggests when the expert—architect, surveyor, builder or mechanic—should be called in. This is a first-rate book, warmly to be commended to all who wish to keep their properties in good and habitable condition. It is hard to see how anyone who has read it carefully could possibly go wrong.

G. J. H.

BUILDING MATERIALS CHEAPER

Fall in Basic Prices During May

THE basic materials index of the Board of Trade fell by 0.7 per cent. between April and May, and the indices for building and civil engineering materials and house building materials fell by 0.5 and 0.6 per cent. respectively in the same period. Among the items contributing to the fall in both these indices were sand and ballast, granite chippings, joinery, roofing tiles and various non-ferrous metal items. The following table, which is abstracted from the *Board of Trade Journal* of June 14, shows the price index numbers of materials used in building from May 1956 to May 1957, inclusive (June 1949 = 100):

	Building and Civil Engineering Materials	House Building Materials
1956		
May...	141.7	141.3
June...	141.8	141.4
July	142.6	142.8
August	143.2	143.0
September ...	143.2	143.0
October	143.1	143.2
November ...	143.3	143.4
December	144.5	144.6
1957		
January	146.6	146.5
February	146.5	146.3
March	146.6	146.5
April	146.7	146.5
May...	145.9*	145.6*

* Provisional.

An index of building costs, published in the same article, shows the cost of building and civil engineering other than repairs (June 1949 = 100) to have been 136 at June, September and December 1956; and 139 at March 1957, the last two figures being provisional.

CRICKET

NFBTE Retain 'Jeanne Hearder' Cup

SOMEONE—perhaps it was the National President—produced the best day of the year on Thursday of last week for the annual cricket match for the 'Jeanne Hearder' Cup, played between the Vitruvians XI (the architectural and technical Press) and the National Federation of Building Trades Employers' XI. The Richmond Cricket Club ground, with the newly redecorated Pagoda at one end and the Richmond Horse Show audible at the other, was in beautiful shape, and quite a crowd of visitors—including Mr. Leonard A. Walden, the National President, Mr. and Mrs. Stanley Hearder, Mr. and Mrs. Roger Stenning, Mr. V. V. Tatlock, Mr. and Mrs. Cedric Aldworth and Mr. K. Carr, President-elect of the Cambridge Builders' Association—were present during the day.

Sad to relate, Joe Bird, of Liverpool, who has captained the Builders for the past three seasons, was unable to be on parade, having mismanaged the date of his holiday in Spain, and another absentee was B. W. Gregory, who usually manages to hit a century in this match. The absence of the Builders' best bowler and most punishing bat was received by the Vitruvians with regret not free from relief. In the event, the National produced, as it were out of the bag, two very worthy substitutes in Sid Shepherd, also of Liverpool, and Longman, of Southern Counties, who turned out to be matchwinners indeed.

The Vitruvians adroitly won the toss and batted first. Boswell and Hirst, the latter an 'Early Bird' and well named at that, made a confident start against Bunny Garrett (LMBA) and Freddy Munnion (Southern) and 34 runs were on the board before Shepherd got a good one past Boswell. Ten runs later, Longman made the first of two good catches at the wicket to send back Hirst, and lunch was taken with the respectable score of 72 for 3.

Whether what then happened was a result of a pre-lunch bar session or of kind things said about their hosts by Mr. Walden and Peter Lovell, President of the Southern Counties and captain for the day, will never be known. The sad fact is that wickets began to tumble with ominous regularity and apart from a productive stand of 32 between Robin Mudie of the *Architect's Journal* and Dowson of the *A and BN*, which saw some big hitting by Dowson which Dai Rees might have envied, there was little opposition to the all-conquering Shepherd and Garrett, and the innings closed for 140.

Coming off the field, the Cassandra of the side was heard to say that this was not enough by 40 runs. And so it proved. White, a mere youngster from Liverpool, and Morton from the Southern Counties made a confident start, and put on 25 before White hit over a yorker from Dowson. Morton, who was fortunate in being dropped twice off snicks, was then joined by Longman, who, not content with his display behind the stumps, proceeded to show how a bat should be used. Morton left, to a brilliant anticipated catch by Hirst, and Blake and Leader did not last long, but not even the wiles of Jack Young (Middlesex, England and Thomas De La Rue), who bowled with cunning on an unresponsive pitch, could shake Longman, who, with some crafty short singles with Shepherd, saw the side home, with six wickets in hand.

So the cup went back to New Cavendish-street, but not before the President had filled it with champagne. Wonderful weather, keen cricket, the ladies' *beaux yeux* and the best of good fellowship. What more can one ask of a June day?

Scores:

VITRUVIANS

D. Boswell b Shepherd	17
R. Hirst c Longman b Garrett	18
A. Boyd b Garrett	2
R. Case c Blake b Shepherd	7
R. H. F. Hill c Morton b Shepherd	14
R. D. Mudie lbw b Shepherd	1
J. A. Young c Longman b Garrett	1
R. Dowson c Morton b Garrett	27
I. M. Leslie not out	12
A. Barnett lbw b Shepherd	4
W. A. K. Faldo b Shepherd	4
Extras	5
Total	140

Bowling: Munnion 8:1:24:0; Garrett 17:2:55:4; Shepherd 19:3:37:6; Blake 4:0:15:0; Leader 1:0:4:0.

NFBTE

J. White b Dowson	19
F. Morton c Hirst b Mudie	15
A. Longman not out	72
V. Blake c Leslie b Mudie	4
V. Leader b Hirst	11
S. Shepherd not out	1
C. Kidman did not bat	
F. J. Munnion " " "	
R. W. Triggs " " "	
P. Lovell " " "	
B. Garrett " " "	
Extras	9
Total (for 4 wickets)	141

Bowling: Dowson 5:0:29:1; Hirst 10:3:21:1; Mudie 8:0:20:2; Young 12:2:33:0; Hill 4:1:12:0; Barnett 2:0:12:0; Case 2:1:5:0.

RIBA Lose to AA

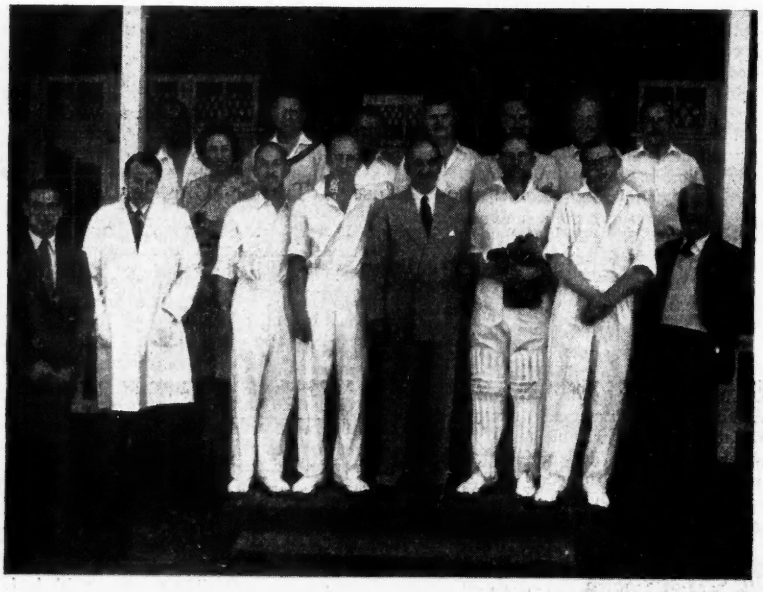
THE annual cricket match between the RIBA and the AA, which has always been played on the AA ground at Elstree, was this year played at Wimbledon on June 12, and turned out to be a very successful innovation. The AA won the toss and, batting first, declared at 207 for 3. The RIBA were left two hours and five minutes to make the runs, and made a good start through Batty, Case and Holmes, but the wicket began to crumble and the later batsmen, with the exception of Taylor, failed to master Sharma's off breaks. Scores:

AA

M. Mallinson b Case	48
B. Nicholls c Taylor b Burrough	44
S. K. Sharma c Case b Norton	71
K. Kiran not out	36
A. Winkley not out	2
J. Thompson did not bat	
A. St. George " " "	
— Williams " " "	
R. Knott " " "	
J. Dalton " " "	
D. Tucker " " "	
Extras	6
Total	207

RIBA

J. G. Batty b Nicholls	10
R. Case c Kiran b Sharma	41
R. T. Holmes b Sharma	24
G. G. Banfield lbw Sharma	19
T. H. B. Burrough b Sharma	0
C. A. R. Norton st Mallinson b Sharma	5
D. le M. Brock st Mallinson b Doulton	5
D. Taylor not out	19
R. Mudie lbw Sharma	0
D. A. Stevens c Williams b Sharma	7
H. E. S. Francis b Williams	0
Extras	14
Total	153



THE NATIONAL FEDERATION XI.—Back row: S. Shepherd, B. J. Garrett, V. R. Blake, F. J. Munnion, V. Leader, J. White and F. Morton. Front row: C. Moisey (scorer), P. J. Flitton (umpire), Miss Mavis Fishburn (scorer), R. W. Triggs, Peter Lovell (captain), L. A. Walden (National President), A. Longman, C. F. Kidman and Stanley Hearder (Director)

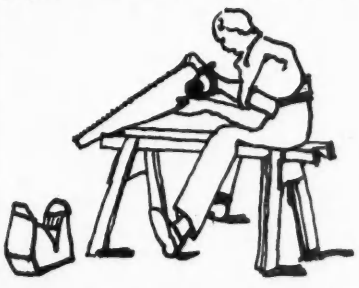
EVERYDAY THINGS

III. The Tools of our Trade

By ARTHUR W. KENYON, CBE, FRIBA

ARE our tools in keeping with the modern day and age? A good workman is very proud of his tools. I remember the first good set I ever had, and I still have some of them. How thrilled I was! The good workman used to carry the tools of his trade with him, although I remember my grandfather engaging a carpenter and sending him along to his Irish foreman who, when he discovered that he hadn't a saw, said 'You're a fine corpenter not having a sawr.'

And talking of saws, I wonder how many people know why a carpenter carries a needle in his kit. I asked a man one day and he said: 'You see, when you set a saw you should be able to insert a needle at the top and it should run down to the bottom without sticking, and then you know you have set it properly.' I remember seeing a man



working with a handsaw which he had shortened, and when I asked him why, he said it did less work. I am still trying to work that one out.

Tools have changed; architect's instruments have changed; the T-square and set-square are giving place to balance-weight contraptions with lever arms and the vertical and horizontals marked out in scales which can be set at any angle. The engineers' drawing offices have adopted them almost universally. There is an implement now for drawing brick lines which can be set to work evenly at any distance. Then there is the fountain drawing pen which has entirely superseded the old type of pen which was always so temperamental. Has draughtsmanship improved? I think so, definitely.

Have the tools on the job changed? Not very much. More labour-saving machinery has been introduced in the shops, but we seldom see portable electric saws, planes, drills, etc., for the workmen on the job. Is it because the men are conservative or that the management have not yet caught up? The pneumatic drill—the wretch!—has taken the place of the hammer and chisel. The mechanical excavator is gradually superseding hand-digging, and the mechanical shovel and scraper are doing much of the muck shifting, but much more research is required to get these properly sized for the varous jobs they have to do.

If we are to shorten the hours of labour, then more aids will be required to produce the same amount of work in less time and with less effort. There is a lot of lifting and carrying still being done manually. There is the old story that when the wheelbarrow was first introduced to assist the Chinese labourer, he thought this was just another imposition and that he was expected to carry the barrow as well. But times have changed.

Many people bemoan the fact that machines are ruining craftsmanship. It may be so in some instances, but a man now has to become skilled in the use of machinery, and still more aids are required on the job. No doubt work will improve in consequence.

(To be continued)

BUNGALOW OWNER SUES BUILDERS

£200 Damages Claim

MOVING into their new bungalow at 12, Mayes-close, Upper Warlingham, last summer, newly-married Mr. and Mrs. Robert Brett found that a kitchen cabinet they had received as a present did not fit the kitchen, although it was made to fit measurements supplied by the builders. This caused them to investigate the size of the kitchen and other rooms, which they found smaller than they should have been according to the plan and specification supplied.

At Croydon County Court on June 4 Mr. Brett sued the builders, Croydon Construction Co., Ltd., for £200 damages. His surveyor, MR. HUGH SNELLING KING, of Coulsdon, told Judge Sir Gerald Hargreaves that on the original plan the total floor space of the bungalow was 971 sq. ft., but the actual measurement was 62 sq. ft. less. Owing to the reduced size of the kitchen it was not feasible to put in usual modern equipment and he considered the market value of the property was depreciated. The hearing was adjourned to a date to be fixed.

CONTRACTORS WARNED AGAINST UNDERESTIMATING TENDERS

Stockport Council's 'Firm Stand' Decision

UNDERESTIMATING of tenders by contractors in the building trade provoked a warning by COUNCILLOR H. HOPE at Stockport Town Council meeting on June 4. He was referring to a tender for £4,000 which had later been altered to £4,640. The Housing Committee had rejected this alteration after a sub-committee had accepted the original tender.

Councillor Hope pointed out that the moment they made contractors aware they meant business they would not be so careless in future. Since the post-war period the bigger proportion of contracting coming in from the building fraternity had all been liable to be interfered with.

ALDERMAN H. PONSONBY said that in view of the experiences they had read about lately in the Press, they had to act in a perfectly straightforward way, even if it cost them something. They must make a firm stand on tendering because they were on dangerous ground. It was much better to carry out the procedure as it was even if they were penalised.

It would be grossly unfair to readvertise, said ALDERMAN W. H. RUSSELL, for the tenders had been published, the figures were known and the next tenderer would be saying that he must get down below such a figure.

The Council decided to adopt the third lowest tender, for £5,523, submitted by another firm.

A BUILDING INDUSTRY BRAINS TRUST

Some Sidelights on Current Problems

A STRONG team, consisting of Mr. J. Harrison, ARIBA, Surrey County Architect; Mr. F. S. Snow, OBE, MICE, consulting engineer; Mr. J. H. Turner, MBE, FRICS, quantity surveyor; and Mr. E. J. Cook, MIOB, contractor, took part in the 1957 Brains Trust organised by LMBA Central Area No. 1, which was held at Derry and Toms' restaurant on June 12. Once again the Question Master was Mr. Ian M. Leslie, OBE, JP, Editor of *The Builder*. The Brains Trust followed a luncheon presided over by Mr. F. A. L. Collis, chairman of the Area. The questions put to the Trust are in italics.

Q.—For the construction of new factory premises ICI are experimenting with a system whereby the building is planned by means of models. There are a series of conferences between the constructional staff and the representatives of the division which will use the new building, at which a very rough model is first produced representing the building and the plant to be installed. This is later evolved into a more elaborate model with the equipment, staircases, etc., arranged in the most advantageous positions for accessibility, economy in manning, etc. Finally, professional model makers construct an exact scale model which shows the most minute details, including the position of all the services. This model is used for the actual construction of the building and is available on the site for consultation by all trades. It is claimed that the model avoids the need for detailed drawings, provides in advance a complete three-dimensional design of the building that is actually required and thus eliminates any possibility of variations. Does the panel consider that this method can eventually be adapted for wider use in the industry?

A.—MR. SNOW thought that although models were extremely valuable they could never do away with the need for detail drawings. MR. HARRISON thought that to use them in the way suggested would be extremely expensive, and would be another burden on the client; nevertheless models were the readiest means of showing a representation of a building in three dimensions. MR. COOK thought the main value of models was to increase the enthusiasm of those who were taking part in the erection of a building. MR. TURNER said that while a model was of vital interest to the client it was not necessary for the quantity surveyor.

Q.—Would the panel support a proposal that the age at which a junior labourer receives full labourer's rate be

raised to twenty, thereby encouraging more youths contemplating entering the trade to take up craft indentures?

MR. COOK said he was in favour of the proposal, but because the building industry had to compete with other industries it might be dangerous to make the change without the support of such industries. MR. HARRISON said he would support anything that would lead to proper training in the industry, but he thought that to adopt the proposal too quickly might be dangerous having regard to the present shortage of labour.

Q.—What is the view of the Brains Trust on the policy of fixed price contracts? Having in mind that the 'unknown quantity' is, as always, the labour factor, how would the Brains Trust suggest that contractors, when tendering, should deal with possible increases, in excess of the cost of living adjustment, which may be demanded next spring?

A.—MR. HARRISON thought that fixed price tenders were going to cause a lot of heart burning. For the word 'preplanning' he would like to substitute 'full documentation.' He foresaw the danger of a hiatus in the smooth flow of work to the industry; this was going to centre around the amount of documentation that a contractor would require before he was willing to commit himself to a fixed price tender—this would cause a break in the continuity of the industry's work. Nevertheless, he believed that fixed price tendering was what everyone wanted. In regard to the second part of the question, this was something to tax the skill of the technical staff, of which the industry was still terribly short. MR. SNOW saw a danger that fixed price tendering would only add to the cost of building by forcing contractors to increase their tenders to cover every eventuality. MR. TURNER said the really important thing to remember was that in getting fixed prices we had got to start somewhere. We could not fix wages for the next two years, therefore we had to start with the contractors.

'A Question of Courage'

MR. COOK said that it boiled down to a question of courage—they had to have the courage to tell the building owner that it was not the starting date that was important but the date on which the building would be completed. Full documentation before starting was essential to the operation of fixed price tenders. He also suggested the insertion of a 'calamity clause' into the contract to cover a major inflation; the contract should be geared to the Board of Trade's index figure of building costs—if prices rose above a certain level in the index, that could be agreed upon, both sides would then, he suggested, have 'to get together round a table.'

Q.—In order to discourage variations after a contract has been let, it is suggested that additions should be debited at bill rates multiplied by three, and omissions should be credited at two-thirds of bill rates. Does the Brains Trust agree?

A.—MR. TURNER strongly disagreed. The quantity surveyor, he said, should deal with variations strictly according to the contract. He did not believe that variations could be avoided entirely—that day would never come when Government departments or private clients would not require them. He thought that the correct spirit of the contract was to face variations in a spirit of co-operation all round. MR. COOK agreed that it was extraordinarily difficult to avoid variations. Quantity surveying, he suggested, was a precise art, but building was not. What was so difficult for a builder to describe was how the constructional processes were upset by variations. The whole question wanted looking at afresh. It should be possible to get a more suitable form of contract to deal with the matter in the general run of jobs.

Compensating the Builder

MR. SNOW thought that it should not be impossible to devise a system for fairly compensating the builder for the loss caused by variations. MR. HARRISON said that there could be no rigid rule.

Q.—Under the RIBA Contract, the contractor has no redress if the architect fails to issue a certificate at the due time. What advice can the Brains Trust give to deal with this situation?

A.—MR. HARRISON said that the short answer was that the contractor had the remedy in the RIBA Standard Form of Contract—if he was not satisfied he could sue the building owner for breach of contract.

Q.—Most people today have fairly definite views on Victorian architecture. What does the Brains Trust think will be the consensus of public opinion sixty years hence on mid-twentieth-century architecture?

A.—MR. SNOW said he 'wouldn't tackle' that one. MR. TURNER said that judging by the safety factors employed most buildings erected today would still be standing 1,000 years from now, let alone 60, so clearly the matter was of vital importance! MR. COOK agreed that while the factor of safety of structure might be high, he was doubtful about the finishes. Victorian architecture was 'rather ornate,' so perhaps the answer was the opposite. MR. HARRISON said that architecture had always been involved in the battle of the styles, until today, when there was no style! Briefly, he thought future generations would be oppressed by the 'dreadful sameness' of the architecture we were creating today.

Too Much Specialisation?

Q.—Specilisation in the building industry seems to be increasing and, in many cases, the main contractor's principal task is to organise and co-ordinate specialist sub-contractors. Does the Brains Trust welcome this trend or would they prefer to see the main contractor doing the bulk of the work direct?

A.—MR. HARRISON said he welcomed 'the builder who builds.' It was all to the good that the builder should do as near to 100 per cent. of the job as possible. MR. TURNER spoke of the difficulty of getting the contractor to do much of the work himself, but he thought the more work he could be induced to undertake the better it would be for all concerned. MR. SNOW concurred, but MR. COOK said it was a frightfully complicated question. Anything up to 70 per cent. of the work on a contract was now done by sub-contractors, and only 30 by the main contractor. Part of the difficulty was a lack of technical knowledge in the smaller firms, but the larger firms, Mr. Cook thought, should have the technical staff that would enable them to carry out a larger proportion of the work.

Q.—Does the Brains Trust agree that there should be no further hourly increase in rates of wages for building operatives, but that stress should be laid on the production side, where one may think there are good opportunities for increasing their wages?

A.—MR. SNOW said that increased rates should be tied in some way to production. He did not think that bonusing really worked, and standards of finishing were deteriorating all the time. MR. TURNER was in favour of incentive schemes 'if they are properly worked.' He was in favour of incentives rather than a flat rate increase in wages.

Q.—Is it not time that tea breaks were abolished? Surely the building industry cannot continue to bear this added cost.

A.—MR. TURNER thought that tea breaks were of no interest to the builder provided he got a proper job. MR. COOK thought that such breaks were essential, but the evil was when they extended from 10 to 20 or 30 minutes. Furthermore, they should be officially recognised, and set against the eight-hour day.

HOLLAND PARK DEVELOPMENT

Planning Application to LCC

ONE OF THE largest undeveloped sites in London, an area of about seven acres on the west side of Abbotsbury-road, overlooking Holland Park, is the subject of a planning application which has been before the LCC since last November. The proposal is to erect some 170 dwellings, including a six-storey block of flats and a number of terraced four-bedroomed houses, with built-in garages and private gardens, grouped around four quadrangles designed to provide the maximum of quietness and privacy to the occupants. The general architectural treatment will follow traditional lines, in keeping with the character of houses erected in the neighbourhood before the war.

The developers are the Rockmead Property Co., Ltd., of which Sir Bernard Waley-Cohen is chairman, who will hold the land on lease from the Earl of Ilchester. The architect for the scheme is William J. Biggs, LRIBA, of Stone, Toms & Ptnrs., 28, South Audley-street, W1. The general contractors will be Wates, Ltd.

A compulsory purchase order made by the LCC upon the site was refused confirmation by the Minister of Housing and Local Government at the beginning of May.

The Builder Review of PLANT & MATERIALS

Powder Extinguisher

A FLAME is a moving front of combustion (oxidation), which depends for its existence on a regular progression of oxidation from one burning molecule to the next. By interposing oxidation inhibitors (negative catalysts) this chain reaction can be halted. The Nu-Swift extinguisher, Model 1604, by Nu-Swift, Ltd., Elland, Yorkshire, has a pressure gauge fitted so that a user can confirm that the extinguisher is charged and ready for action. The operating head is a heavy chromium-plated, hot brass pressing, containing a strike knob and a nozzle. A strong rubber carrying handle, shaped like a pistol grip, makes it possible to aim accurately at the heart of a blaze, even in the dark. When the knob is struck a fan-shaped cloud of fire-killing powder is expelled through the nozzle with a range in still air of 10 ft. at 65 deg. F. The cloud is 4 ft. wide and 2 ft. 6 in. deep. As the extinguisher is a total discharge model once the seal has been pierced the flow cannot be stopped. Approved by the Fire Offices' Committee, it will operate at temperatures down to −40 deg.C. This model has been specially developed for use on all accessible Class B and Class C fires. The dry powder is held, with dried carbon dioxide, in a sealed pressure charge so that it cannot be affected by atmospheric humidity, and recharging can be carried out in 30 seconds. Weight fully charged, 10½ lbs.; powder content, 4 lbs.; weight of CO_2, 1.27 ozs.; height, 15⅞ ins. The discharge time is eight seconds.

Deodorised Wood Preservative

A new deodorised wood preservative is the latest development to come from the Protim research laboratory. As a preservative it is claimed to be as good as Standard Protim but it is without the slight odour given off by the standard product. The new preservative has been specially prepared for use in catering establishments and hotels and any warehouses where materials are stored which might be adversely affected by the odour of a normal preservative.

Roofing Sheet

The 'Cookson' sheet has been introduced by Petalon, Ltd., 65, Maygrove-road, London, NW6; it consists of a 24-gauge galvanised steel sheet with three ribs at 10-in.-centres along the length. It is made in sheets up to 35 ft. long and it relies on a longitudinal clipping action of one rib over another for fixing. Purlin spacings up to 8 ft. are possible and fixing is entirely from the top. Net coverage is 20 ins.

Vertical Plan Filing

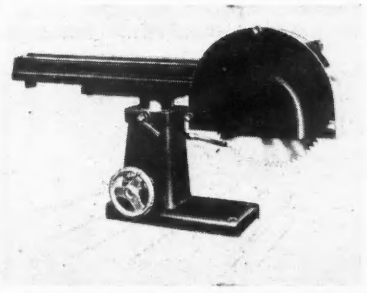
A new vertical plan filing system has been introduced from the Continent by M.B.C. (Office Systems), Ltd., 31, Crouch-street, Colchester, Essex. Some of the characteristics claimed for this method, known as the GABS system, are as follows: Drawings of all sizes up to 60 in. by 40 in. can be filed, drawings of different sizes may be filed in one cabinet, all drawings are suspended separately from the top, and only one drawing need be handled when withdrawing and returning to the file. Up to 4,000 sheets may be filed in an area of less than 10 sq. ft.

Special Duty Woodworm Killer

Cuprinol, Ltd., Terminal House, Grosvenor-gardens, London, SW1, are now able to offer Special Duty Woodworm Killer, a new grade of insecticide, especially formulated for the treatment of structural timbers. It contains carefully compounded stomach, respiratory and contact insecticides, together with a long-lasting preservative which, it is claimed, will prevent any chance of reinfestation of the treated timbers. Special Duty Woodworm Killer must not be used on polished woodwork. It is intended to fulfil the need for an effective insecticide on structural timbers at a price more economic than the standard Cuprinol Woodworm Killer, which should always be used on polished surfaces.

Cross Cutter

A new pull out cross cutting and trenching machine is announced by A. Whitehead and Co. (Halifax) Ltd., Well-lane, Halifax, makers of the range of 'Junior' woodworking machines. The new model swivels to 80 deg. and can thus work two tables. Details are:—diameter



Cross-cutting and trenching machine by A. Whitehead and Co. (Halifax) Ltd.

of blade, 16 in.; maximum length of stroke, 14½ in.; rise and fall, 4 in.; depth of cut, 4 in.; overall length 50 in.; width, 22 in.; height, 21 in. The saw blade can be utilised efficiently at any angle. The machine is bench type and can be supplied with or without stand.

Floor Finishes

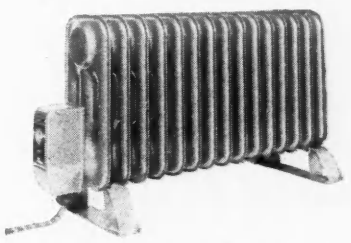
Snowtop Products, Ltd., manufacturers, and their sole distributors, J. H. Sankey & Son, Ltd., Aldwych House, WC2, announce the introduction of 'Snowtop,' 'Colourtop' and 'Metaltop.' These are floor finishes that, it is claimed, will enable a finished floor to be produced in one operation during placing of site concrete and at a negligible labour cost. These products are supplied in the form of dry powder.

Asbestos Partition Board

'Turnall' asbestos partition board represents a new stage of development in the manufacture of asbestos-cement building products by Turners Asbestos Cement Co., Ltd., Trafford Park, Manchester, 17. This partition board has a high asbestos content and provides a combination of strength and flexibility. It is a compressed product available in a standard size of 8 ft. by 4 ft. with a finished thickness of ⅛ in. and can be safely and easily curved to a radius of less than 12 in.

Small Oil-filled Radiator

Being introduced for the first time at the 1957 British Electrical Power Convention will be the new Hurseal S.75 radiator. It joins the range of Hurseal permanently sealed oil-filled electric 'safety' radiators. The S.75 is a 3-column lightweight steel oil-



Oil-filled radiator by Hurseal, Ltd.

filled radiator of .75 kilowatt loading and is only 10¾ in. high without feet for wall fitting. It has been specifically designed for installing under windows which reach almost to floor level and it is marketed in the Hurseal standard colours of cream or bronze, but it can also be obtained in eau-de-nil, sky blue, white or gold.

Single-pitch Lantern

W. H. Heywood and Co., Ltd., patent glazing and structural thermal insulation engineers, of Huddersfield, have just introduced a single pitch lantern which is available in a large range of standard sizes: 4 ft. long by 4 ft. wide to 12 ft. long by 4 ft. wide; 4 ft. long by 6 ft. wide to 12 ft. long by 6 ft. wide; 4 ft. long by 8 ft. wide to 12 ft. long by 8 ft. wide in increments of 2 ft. The entire construction of the framing is in aluminium alloy. Unless otherwise specified, the lanterns are fitted with ¼-in. georgian wired cast glass. The opening portions are horizontally centre pivoted and are situated in the front vertical framing.

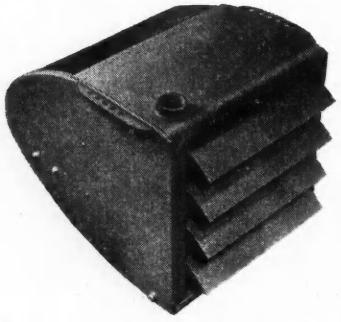
New Fire-check Door

'Half-hour' fire-check doors now being produced by Thames Plywood Manufacturers, Ltd., of Barking, Essex, are claimed to have the highest known sound insulation properties for such doors; they have recently been tested and passed by the Department of Scientific and Industrial Research and by the Fire Offices Committee of the Joint Fire Research Organisation. Faced with plywood, the doors are 1¾ in. thick, the inner core of Thamesply-Werno being covered on both sides by $\frac{3}{16}$ in. composition asbestos. They can be made to size accord-

ing to architect's specification, and glazing openings up to 2 sq. ft. area can be provided.

Unit Heaters

The 'Uniflow' heater is claimed to be the most advanced unit heater in the country. Designed and produced by F. H. Biddle, Ltd., the new unit incorporates many exclusive features including an entirely new conception in body styling and a heating element revolutionary in design and performance. The fan and motor assembly are resiliently mounted in the casing in a way which reduces noise and vibration to an absolute minimum; this fan motor assembly is enclosed in a strong wire mesh guard designed as an integral part of the unit.



'Uniflow' Heater by F. H. Biddle, Ltd.

Emulsion Floor Sealer

'Bourne Tileseal,' a new water-based plastic emulsion seal for the treatment of thermoplastic tiles, rubber and linoleum is marketed by Floor Treatments, Ltd., High Wycombe, Bucks. The preparation, it is said, does not affect the existing floor colour and is dirt resistant, easily cleaned and proof against black rubber marking. One coat applied with a soft cloth or mop produces an attractive eggshell finish and takes about 20 minutes to dry. One gallon should be sufficient to cover approximately 200 sq. yd. A high finish can be obtained by applying a second coat diluted with 50 per cent. water.

TRADE NEWS

Change of Name

On June 1, 1957, Twisteel Reinforcement, Limited, changed its name to G.K.N. Reinforcements, Ltd. The reason for the change and the choice of this name is a recognition of the importance which the Guest Keen and Nettlefolds group of companies attach to the supply of steel for concrete reinforcement and the fact that the title of Twisteel Reinforcement, Ltd., no longer gives a fair description of the scope and activities of this particular company. All types of reinforcement can now be supplied to any part of this country or for use overseas. The directors are:—C. R. Wheeler, CBE (Chairman); N. R. R. Brooke; K. G. Hann; H. S. Killick, MC (Managing); G. Kilner, MIStructE; K. S. Peacock; M. S. Pearce; H. Wheeler.

Works Expansion

Hewitt's of Cranleigh, Surrey, makers of the Cranley System of prefabricated buildings, have now moved from their former site of three-quarters of an acre to their new Elmbridge Works of over seven acres.

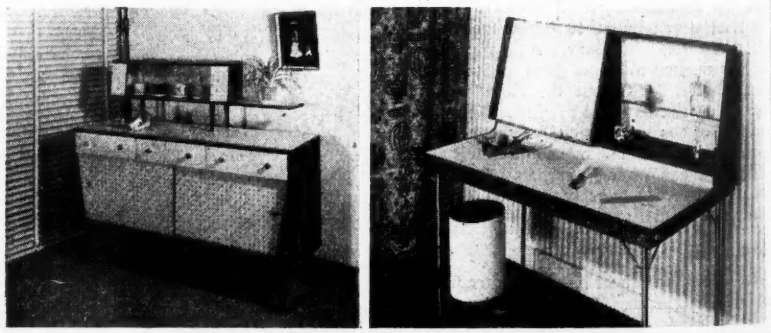
Trade Publications

The following publications have been received; unless otherwise stated they are available free on application to the publishers: *Roof Space* and *General Information, Velux Rooflights*, The Velux Co., Ltd., 167, Victoria-street, London SW1. *Sylvaply News March and April*, 1957, MacMillan & Bloedel, Ltd., 837, West Hastings-street, Vancouver BC. *Osram Bulletin Vol.* 134, *No.* 2, General Electric Co., Ltd., Magnet House, Kingsway London, WC2. *R.I.W.* 232, R.I.W. Protective Products, Ltd., 325, Whitehorse-road, Croydon, Surrey. *Armstrong Flooring*, from the Armstrong Cork Co., Ltd., Bush House, Aldwych, London, WC2.

The CAC Magazine, Vol. 6, *No.* 2, published by Cape Asbestos Co., Ltd., 114/116, Park-street, London, W1. *Precision Engineering in Timber Guaranteed by Glued Lamination*, Kingston (Architectural Craftsmen), Ltd., Minster Works, Hull. *Technical Information Sheet No.* 501, Nu-Swift, Ltd., Elland, Yorkshire. *'Instantor' Compression Fittings*, Imperial Chemical Industries, Ltd., Metals Division, Millbank, London, SW1. *Ruberoid Round the World, No.* 10, the Ruberoid Co., Ltd., 386, Commonwealth House, 1-10, New Oxford-street, London, WC1. *Technical Bulletin, No.* 25, by Victor Products (Wallsend), Ltd., Wallsend-on-Tyne.

Master Clocks and Slave Clocks, Autoprint Time Recorder, Exterior Advertising Clocks, Interior and Exterior Clocks, four new leaflets by English Clock Systems, Speedometer House, 179-185, Great Portland-street, London, W1. *'Bull Dog' Floor and Ceiling Clips*, and *'Redalon' Cement Retarder*, The Adamite Co., Ltd., 94-98, Petty France, London, SW1. *Mark* 1 *Propellor Fans*, and *Ancillary Equipment for Propellor Fans*, Woods of Colchester, Ltd., Colchester, Essex. *Channels and Gratings*, Broads Manufacturing Co., Ltd., 4, South Wharf, Paddington, London, W2. *Don't Heat the Crows*, The Rheostatic Co., Ltd., Slough, Bucks. *Pamphlets JTS* 1, 2 2(a),3, 4, 5 *and* 7, dealing with rust removers and chemical sealers, by Jenolite, Ltd., 13-17, Rathbone-street, London, W1. *Hearson's 'Unit' Laboratory Furniture*, Charles Hearson & Co., Ltd., 68, Willow Walk, Bermondsey, SE1. 6 *and* 7 *Fast Standard Mobile Cranes*. Ransomes & Rapier, Ltd., 32, Victoria-street, SW1.

FORMICA DEVELOPMENTS. — At an exhibition held recently, new patterns and colours were announced by Thomas De La Rue and Co., Ltd., Imperial House, 84/86, Regent-street, London, W1. Also introduced was a new sheet size, 30 in. wide up to 10 ft. long, and two lighter tones in Australian walnut. The exhibition included several pieces of domestic furniture by well-known designers which incorporated 'Formica' laminated plastic. They are, top left, a sideboard and cocktail cabinet, manufactured by James Lupton and Sons, Ltd., of Leeds. Top right, an hotel writing-dressing table designed by John and Sylvia Reid, AA.RIBA, MM.SIA, and made by Davis Fabrication Co. Bottom left, a dressing table, manufactured by N. Morris and Co., Ltd., of Glasgow; and bottom right, a washbasin make-up unit, designed by Peter Hayward, MSIA, and made by W. G. Evans and Sons, Ltd. A certain concern is being felt by De La Rue because 'Formica' is being used as a generic term, other materials being supplied in its place by stockists. Steps are being taken to mark 'Formica' products more distinctively



AMERICAN DEPARTMENT STORES MOVE TO THE SUBURBS

Car Parking Difficulties Create New Trend in Shopping Habits

From a New York Correspondent

UP to about twelve years ago, the ladies of our Westchester neighbourhood used to do their shopping at Macy's or Gimbels' or Altman's in New York City, and they liked it because they were able to park their cars right in front of those downtown department stores. But today you cannot park in New York City any more. As Will Rogers used to say: 'When you have managed to get a parking space in New York, for heaven's sake leave it there and buy you another car for driving.' This, of course, is only one of the reasons why suburb people prefer to stay in the suburbs for their shopping. There a space for parking can always be found.

Population Growth

Some other reasons for the trend to move department stores to the suburbs have been mentioned recently in an extensive study by D. A. Saunders. The population increase between 1940 and 1950 was the largest in US history. The suburbs, growing much faster than the central cities or the countryside, accounted for practically half the total increase. Motor vehicle registrations today are about 50m., while in 1940 they were only 32m.

Another factor is that American public transport has greatly increased in cost.

The same reasons are valid for all the large American cities and that is why the same trend—to move department store branches to the suburbs—appears in all parts of the country, from Los Angeles to New York, and from Chicago to Boston. Most of the new branch stores have large parking lots immediately adjacent to the store.

At Altman's branch store in White Plains, NY, particular attention has been given to the parking problem. Attendants are stationed at the upper main level entrance to help the customers with packages, or to drive them to their cars in small station wagons when the customer has finished shopping.

'The dynamic growth in retailing today is in the suburbs,' says B. Earl Puckett, board chairman of Allied Stores, the largest US department-store chain. Most experts agree that no suburban branch department store ever built has proved too large, although many complain that they have built on too small a scale.

Planned Environment

For the suburban branch department store, the great advantage of the regional shopping centre is its planned environment. As Mr. Saunders points out, a large group of stores, selected for both their competitive and supplementary aspects, exercise a combined drawing power far exceeding the sum of their individual appeals. The customer, of course, likes the idea of 'one stop' shopping in which practically any combination of merchandise wants can be met by a single trip.

A shopping centre requires, according to Saunders, within less than 30 minutes' driving time, a potential market of at least half-a-million, mostly above the national income average.

The alternative to a shopping centre is stated thus: If a store does not create its own environment, then the environment creates itself. A large department-store branch has a tremendous pulling power and that attracts other stores. It is no pleasant experience for an individual department-store branch to have other merchants cash in on its pulling power, but it happens every day.

The expansion of the economy for over a decade has dulled the impact of the suburban branch on the downtown store. As Mr. Saunders points out, even in Los Angeles the downtown stores have registered an increase in dollar volume, despite the explosive growth in that area's suburbs. But there is a three-fold threat of the suburban branch; it may undercut the volume of the downtown store; it may change its character; and it tends to divert the attention of main-store executives from downtown problems.

To counter this, many merchants are becoming increasingly interested in revitalizing the downtown by superhighways into the heart of the city. The department stores, says Mr. Saunders, did not create the downtown muddle in America's large cities—they cannot solve it either. 'In the meantime they had best roll with the punch and head for the suburbs.'

SKYSCRAPER FLATS FOR BIRMINGHAM

To be Designed as Landmark

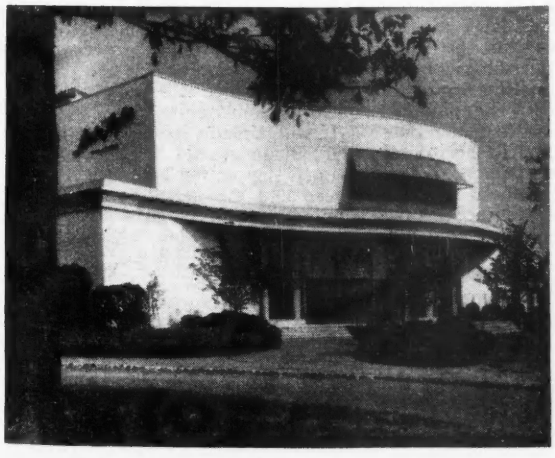
BIRMINGHAM is to have a 16-storey block of flats—the tallest yet to be built in the city. It will be on the Wyrley Birch municipal housing estate at Erdington and is to be ringed by eight-storey blocks of maisonettes. The scheme was approved at a meeting of the Birmingham House Building Committee on June 6 when it was stated that the block would be a narrow building designed specially as a landmark to break the skyline.

A 15-storey block of flats is also to be built on the Lyndhurst Estate at Erdington. The tallest blocks of flats in Birmingham at present are those of 12-storeys at Duddeston.

The committee also approved the start of a scheme for building 108 dwellings on a site at Hawkesley Farm, Northfield. Part of the moat there and any old foundations that may be discovered are to be preserved as of historical interest. Prince Rupert besieged Hawkesley Farm in 1645.

City and Guilds Annual Report

The City and Guilds of London Institute have issued their Seventy-Seventh Annual Report 1955-1956, which contains lists of members, council, senior committees and staff of the Institute; details of examinations held throughout the year and reports of the work carried out in the Institute, Art School and College.



Two examples of American department stores that have moved to the suburbs: (left) Lord and Taylor's new stores at Millburn, New Jersey, and (right) Altman's stores at White Plains, New York

Some Technical Problems in Building Maintenance

A PAPER TO THE INSTITUTE OF MUNICIPAL BUILDING MANAGEMENT

The following paper by MR. O. P. D. WILLIAMS, LRIBA, ARICS, superintending Maintenance Surveyor, Ministry of Works, was among those presented and discussed at the recent Week-end School sponsored by the Institute of Municipal Building Management, by whose permission it is reproduced.

THE business of building maintenance calls for some knowledge of physics, mathematics, botany, and chemistry; of archaeology and architectural history and design; of economics and labour management; of pestology, hydraulics, behaviour of materials, structural mechanics and building craft techniques. All these branches of knowledge (and there are others) contribute to a general 'science of maintenance,' and the truly efficient maintenance man is one who recognises the essentially scientific nature of what he is doing and welcomes the demands it makes on him for a constant exercise of intelligence, alertness and a progressive, constructive attitude of mind.

Our knowledge is never complete. New methods and new materials force themselves upon our attention at a rate which 25 years ago would have been unthinkable. In the changing and challenging times in which we live the architect, despite a proper conservatism, does not fear to be progressive. Architectural design to-day is adventurous and experimental, availing itself of a wealth of new materials and new methods of construction in which to embody modern architectural idiom. In such an atmosphere those responsible for maintenance cannot afford to sit back and remain content with old knowledge derived from student-day text books. In maintenance work there is always something new to learn.

Diversity of Problems

A field of activity ranging from the re-washering of taps to structural problems of underpinning or the chemical behaviours of paints and plasters—a field which, moreover, while often producing problems of a novel and challenging character covers also a vast amount of ordinary, day-to-day hum-drum of minor repair—can all too easily induce a feeling that one is at best fighting a rear-guard action against the unforseeable, and, before I pursue my main purpose of suggesting the possibility of a more constructive point of view, it may be interesting to demonstrate, by a few examples, this diversity of the problems with which from time to time the maintenance surveyor finds himself confronted. (For the sake of brevity I propose, in what follows, to use the word 'surveyor' as a general term applicable to anyone concerned with the maintenance of building structures.)

My selection is drawn from a relatively small group of the structures for the maintenance of which the Ministry of Works is responsible, for there must necessarily be amongst these many that are outside your interests, ranging as they do from post offices and public statues, hutting, hangars and housing, offices, storage warehouses and coastguard look-out huts, to ancient monuments and palaces.

Examples of Maintenance Problems

In this country one of the chief enemies of building structures is damp, which for our present purposes may be defined as moisture in unwanted places, and constructional design and detailing are constantly concerned to ensure its exclusion. Much of our ordinary routine maintenance is concerned with achieving the same end.

Non-cavity brick walls, some no more than 9 in. in thickness, exist in many of the older buildings. In exposed positions the resistance of 9-in. brickwork to driving wet is very low and the original design and present condition of parapet walls in particular repays careful attention. Hair cracks in cement mortar joints caused by setting shrinkage of a too rich mixture, are a ready source of moisture penetration by capillary attraction and if no damp-proof course has been provided at the point where the apron flashing to gutter or flat roof turns into the brickwork, permanently damp walls are an almost certain consequence. It seems sometimes to be supposed that a damp-proof course immediately under the copings is all that is required. This is not so, and if general and persistent dampness in brick walls is being experienced it is advisable to examine in the first place whether a dpc has been provided additionally at the apron flashing level.

I can recall at least one case in which these two positions coincided, the underside of the coping being no more than 6 in. above the asphalt flat. In this instance, unfortunately, a too generous down-turn of the apron flashing induced capillary attraction of moisture into the body of the brickwork. The plumber would have used his lead to better purposes had he ensured that its horizontal portion, constituting the dpc immediately beneath the coping, had been brought right through to the outer face of the brickwork instead of finishing, as it did, some $\frac{3}{8}$ in. back.

A rather more mysterious case of unwanted moisture called for some detective work in its elucidation.

The building in question was a large, three-storey structure, in the form of a double 'H.' External walls were of $13\frac{1}{2}$ in. solid brickwork with parapets rendered on the inside and with damp-proof courses immediately below the coping and at the level of the top of the asphalt skirtings to the flat roofs. Floors were of concrete and the roof constructed of hollow clay pots and reinforced concrete screeded to falls with foamed slag light-weight concrete, covered with rock asphalt on sheathing felt. Falls to the roof of the centre block and connecting links were from the centre of the roof towards the parapets on either side but in the case of the two end blocks the roof surfaced had a single fall—away from the outside flanks of the building.

Records showed the weather to have been 'poor' during the laying of the roof screed and of the asphalt and that the screeding was exposed to the weather for some one to four weeks before being covered.

The first signs of trouble were given by stains on the top floor ceilings and the dripping of a brown fluid. This was at first attributed to certain cracks in the asphalt skirtings brought about by thermal movement of the structure. After the skirtings were re-formed the moisture dried up, but reappeared some six months later.

In the course of testing the asphalting for leaks the roof was flooded with 4 in. of water without producing any acceleration in the dripping. Moreover, after a period of drought of approximately 30 days, the brown liquid continued to penetrate the ceilings.

Chemical analysis of the liquid showed it to have a creosote base.

It was noted that the trouble occurred only in the end blocks, in the ceilings of rooms facing towards the centre block. None of the rooms on the opposite sides of the corridors was affected nor any in the centre block or connecting links.

No signs existed of any general penetration of damp through ceilings or walls; inspection of the roof revealed no defects in the asphalt and the re-forming of the skirtings previously carried out was entirely satisfactory.

Alkali Attack

The only material in the roof from which creosote oil could be derived was the sheathing felt below the asphalt, and this is insoluble in plain water. But it was known that water charged with alkali will attack sheathing felt and release the pitch with which it is frequently impregnated in manufacture.

It will already have occurred to you that alkalis would be present in the foamed slag of the light-weight concrete screed and this—after the most careful elimination of feasible alternatives—was indeed found to be the source of the trouble. Foamed slag concrete is extremely absorbent of moisture; laid on relatively impervious structural concrete and exposed to inclement weather for awhile, it could readily be fully saturated at the time the asphalt was laid.

The trouble ceased in the summer only to recur in the following winter. This is to be explained on the one hand by the increased ventilation and better drying conditions prevailing in summer and, on the other by the fact that in the winter, when the interior of the building was

much warmer than the outside air, moisture locked in the roof slab tended to vaporise and rise to the cold underside of the asphalt, to condense and gravitate through fine cracks to the bottom of the roof slab, bringing tar oils leached out from the sheathing felt with it, and eventually finding its way through fine cracks in the plaster soffit.

In this instance curative methods were necessarily restricted to the acceleration of the drying-out process by all available means and, when this had finally been effected, the making good of plaster cracks and redecoration of the stained ceilings. Where complete removal of the stains before redecoration proved impracticable, one or two coats of aluminium oil paint were specified as necessary to seal back the stains, followed by a sharp coat of ordinary oil paint to mask the aluminium paint and provide a suitable surface for the decorative coats.

Damp can be deleterious to buildings in many different ways. An old, four-storeyed building, faced in terra-cotta, exhibited extensive cracking of the terra-cotta blocks. The form of the cracking varied, in some cases it was of a 'starred' nature while in others the cracks ran parallel with the webs. The building was unframed, the brickwork backing being of load-bearing character. Some of the cracks were as much as ¼ in. deep with a maximum width of 2 m.m. Both buff and red blocks had been used in the design and it was found that the buff blocks had been affected to a much greater extent than the red. All the blocks had filling of breeze concrete and it was the expansion of this filling, due to access of moisture, that had produced the cracking. Apart from the replacement of blocks as necessary, maintenance overhaul in this case was primarily a matter of re-pointing and a very careful attention to all flashings.

In the case of a certain building faced with cast stone, deterioration was even more directly attributable to the action of water. The cast stone in question was found to consist of a core of dense concrete, mainly composed of felaphathic sandstone, and faced with a rather porous mortar. This facing had eroded by the solution of the bonding material in rain-water, as evidence by the fact that damage was greatest in the lower parts of the façade where, of course, the quantity of water running over the face would be greatest. Reinstatement of the decayed stone was effected by the plastic repair method, consisting of cutting back the affected surface to a sound face, forming a key and making good with mortar composed of cement, lime and aggregate similar to the existing. The whole of the façade was washed down with clean water applied by means of fine spray nozzles and the use of scrubbing-brushes.

Plastic Repairs

The restoration of stonework by the plastic repair method is a highly specialised operation demanding considerable skill in the choice and preparation of materials, and experience on the part of the operatives. There is no standard specification for this work and the methods of the specialist firms who undertake it vary.

The problem of prevention of decay of natural stone by colourless preservatives has received much attention both here and abroad. Available evidence leaves the effectiveness of such treatments doubtful and their adoption requires some caution.

On brickwork, moisture as an agent of destruction shows itself chiefly when sulphates are present. Sulphate attack requires water for its manifestation. Given this, it may range in severity from unsightly but innocuous efflorescence to a disruption resulting in collapse. Sulphate attack on Portland cement mortar causes the mortar to expand and in the case of part of a long boundary wall that had collapsed it was notable that the fall had been away from the side most subject to rain.

The case to which I have referred involved very extensive runs of boundary walling, of which only a relatively small portion was the subject of sulphate attack. Damage to the remainder was caused by movement attributable to temperature fluctuations and the circumstances merit at least a brief reference as having been, at the time, without parallel in the experience of the Building Research Station.

The wall in question was a 13½ in. brickwork built in English bond 10 ft. 6 in. high with piers on one side at 15 ft. centres, and expansion joints of solid bituminous sheet material about ¼ in. thick forming vertical joggles in the wall at 135 ft.-150 ft. intervals. The coping was of bull-nosed bricks on edge on a slate dpc with a similar dpc four courses above ground level.

Thermal Expansion

Although there was no doubt that damage was correctly ascribable to thermal expansion and contraction the fact was nevertheless surprising, having regard to the spacing of the expansion joints. The co-efficient of thermal expansion of brickwork commonly quoted is 0.000003. The mean temperature rise in a wall due to strong sunshine on a summer day may amount to 15 deg.-20 deg. Farenheit. On this basis the expansion of a 150 ft. length of wall would not exceed about one tenth of an inch and even allowing for a substantially greater temperature variation it is unlikely that the wall could expand by an amount greater than the expansion joints could accommodate. Nevertheless the expansion joints in many cases had closed right up.

Cement mortar is relatively inelastic and will readily develop cracks as a result of thermal movement. In the case in question the conclusion reached was that following repeated movements due to changes in atmospheric conditions, particles of broken mortar lodging in the cracks allowed stresses set up in the walling to be transmitted from section to section, resulting in permanent and cumulative expansion of the walling and the development of the wide cracks observed.

Many examples of long boundary walls enclosing country estates come to mind that have given little or no trouble over long periods of time. These old walls, however, are invariably built in lime mortar, and although there is little difference between the coefficients of expansion of brickwork in lime mortar and that in cement mortar, the modulus of elasticity of the former is very much greater than that of the latter. Most of these old walls, moreover, are of greater thickness than their modern counterparts and therefore do not attain high temperatures so quickly.

External Treatment

Methods of external treatment to be adopted for the overcoming of chronic damp penetration through the walls of buildings can vary very widely and choice must be guided by the character and importance of the building as well as by the severity of the conditions encountered. Possible methods, in descending order of costliness, include: the construction of an outer weather-leaf wall 2 in. clear of the exterior face of the structural wall; application of a lime/cement rendering or of a cement rendering with a 'Tyrolean' or similar finish; application of cement paint, cement slurry or bituminous coating; or the application of a colourless weather-proofer.

The construction of an outer 4½-in. weather-leaf wall, tied back to the existing wall by means of wall ties, is an expensive and difficult operation involving alteration of window reveals and the like as well as external plumbing, and would clearly be resorted to only in cases in which preservation of the architectural character of the structure was of prime importance.

When a change in appearance is permissible a permanent cure can be effected by a good rendering, properly applied. The obtaining of a sound key for the rendering, either by thorough hacking of the whole of the brickwork face or the application of cement and sand spatterdash, coupled with thorough raking out of soft mortar joints, is essential.

Paint or slurry treatments, while much cheaper in initial cost, require periodic renewal.

A more durable method, in cases where the appearance is acceptable, is the application of a bitumen emulsion to the walls, followed by a blinding of mineral granules, both materials being mechanically applied by means of a spray gun. The blinding is sprayed on whilst the emulsion is still tacky, and completely covers the bitumen coating. Various mineral granules, including crushed slate, granite and Durite grit (crushed calcined flint) are used for blinding. Crushed slate granules probably afford the most complete cover to the bitumen but this type of finish, which is very similar in appearance to mineralised roofing felt, is rather dull in colour. Durite grit, which is off-white in colour with a small proportion of red flecks, leaves a certain amount of the bitumen showing but the general appearance is quite light and pleasing and does not call for further decoration. There are one or two firms which specialise in this type of treatment.

The application of a colourless waterproofer is the simplest and cheapest possible treatment and has the advantage of not materially affecting the appearance of the building. One of the best can be expected to have an effective life of about two years.

The idea of applying damp-proofing treatment to walls *internally* is of course wrong in principle but occasions may arise when no other alternative is practicable. In one such case in which persistent dampness had caused the internal plaster to perish and the movement of salts in the backing of fletton bricks (which are noted for their sulphate content) had produced efflorescence, a proprietary brand of lathing in the form of corrugated fibre sheeting impregnated and coated with bitumen and reinforced with metal strapping was used. After removal of the old plaster the lathing was fixed to the inner face of the wall with the corrugations running vertically, the bottom edge being bedded in cement mortar to prevent moisture finding its way to the base of the lathing. The new plaster finish on this lathing consisted of two coats of a Class 'B' plaster, and the results proved satisfactory.

Dry Rot

Any discussion of damp in buildings would seem to be incomplete without at least a passing reference to dry rot. The ubiquity of this menace, however—largely a legacy of bomb damage—is such that you all have doubtless experienced it and are experts in the methods of its treatment. In this connection, therefore, I propose to confine myself to a few observation on the subject of wood preservatives.

These comprise tar oil types (creosote complying with BS144), water solution types (sodium fluoride, magnesium silicofluoride), and organic solvent types.

Preservatives of the tar oil type are suitable for external use and are non-corrosive to metals. Their disadvantages are that they will bleed through paint and plaster and are, generally speaking, unacceptable for internal use by reason of their smell. Preservatives of the water solution type are generally odourless, can be painted over, and present no fire risk. Some disadvantages are that they are generally less resistant to leaching out when exposed to the weather, and some varieties are corrosive of metals and other building materials. Some varieties moreover, are highly poisonous. Preservatives in the third group (organic solvent types) are effective and weather resistant, and can be painted over. They are expensive and for this reason application is usually by brushing or dipping. Most varieties are highly inflammable.

Methods of treatment include brushing, dipping and pressure impregnation. The last named is costly and is used mostly for work of reinstatement in old buildings, when complete isolation of the new timber from moisture is not practicable. It is also appropriate for items such as mast butts buried in the ground. Brush application is usual where re-treatment is possible, such as on timber fencing. Where *in situ* treatment only is feasible, and conditions are severe, brush applications may be supplemented by boring holes obliquely into the timber and filling those with preservative.

Suitable precautions must be observed in the handling of fungicides and if spraying is resorted to mask or respirators with goggles should be provided, as well as adequate washing facilities. Risk of dermatitis in the handling of these substances, though not acute, is not negligible. The same remark applies to the use of toxic washes, obtainable under proprietary names, and consisting essentially of sodium pentachlorphenate, which are effective for the removal of algae from stonework and prevention of their further growth.

The general topic of redecoration, which figures so prominently in the routine of maintenance, is referred to later in this paper, where particular emphasis is laid on the importance of the preparatory processes. Here it may be of interest to make a brief reference to a case in which the problem was the painting of a Bailey Bridge, some 210 ft. in length, constructed for heavy road traffic, with members of mild steel, many of which had been previously erected elsewhere, most of them (though not all) having been previously painted. The condition of the various members and prefabricated sections varied; those not previously painted were of course rusted and pitted; most of the existing paint was weathered and damaged and in many places suffering from under-rusting. The specification provided for washing and rubbing down of sound paintwork and removal of all unsound material. The cleaning of bared surfaces was to be by wire brushing followed, on areas where the steel was pitted or the rust otherwise insufficiently cleaned off, by a phosphoric acid wash. Owing to the complexity of the design, wire brush heads of various sizes and patterns were considered necessary for the mechanical wire brushing operation, the alternative being the use of mechanical chisels.

As regards the use of phosphoric acid washes, it is advisable to apply them by brush, rubbing in vigorously, applying more solution as necessary and then thoroughly swabbing off before they have dried, in, say, about twenty or thirty minutes. Some makers direct that the material should not be washed off but even if general swabbing is omitted, heavy deposits and drops, particularly where trapped in pockets or crevices, should in any case be removed. Protective clothing, including eyeshields, should be used by operatives applying phosphoric acid washes, or at least a suitable barrier cream and eyeshields.

The preparatory work on the bridge was performed in sections and followed, as soon as the surfaces were clean and dry, by priming. Supervision was directed particularly to the avoidance of polishing by the mechanical brushes, which would have been detrimental to the paint key; to the dusting off of all surfaces immediately prior to the application of paint; and to the keeping of painted surfaces free of rust dust which might blow over from parts still being cleaned. The specification called for a priming coat (red lead or red oxide—zinc chromate alkyl) two undercoats, and a gloss finish of a synthetic resin-containing paint.

The Keeping of Records

The behaviour of new materials, separately or in combination, and the effectiveness of novel design details are matters which fall to the maintenance surveyor to observe and record, and a lively liaison between those responsible for new design and those concerned with subsequent maintenance is a matter of interest and benefit to both parties.

Such co-ordination is, however, difficult to achieve unless there exists, somewhere in the office organisation, a section responsible for the handling of information.

Even the older buildings of completely orthodox construction, are capable of producing unusual problems and in such cases the existence of a well organised and up-to-date information bureau can more than justify its existence in the saving of time and effort or the possible repetition of past errors.

The collection and analysis of statistical data for the use of higher management are also obviously greatly facilitated by the existence of a single centre for the co-ordination of information.

The optimum size of such a unit must obviously vary appreciably from one instance to another, but even in the smallest organisation it will prove profitable to create a focal point which can be looked to for the production of reliable and up-to-date technical and general data, either from its own resources or through contact with outside sources of specialist knowledge such as the Building Research Station, the Road Research Laboratory and the Forest Products Research Laboratory of the Department of Scientific and Industrial Research, and the specialist associations concerned with the development of specific materials.

For the use of the individual surveyor, superintendent or foreman authoritative technical data on a wide range of subjects, presented so as to be readily assimilable, are available in the series of Advisory Leaflets prepared by the Ministry of Works and obtainable through Her Majesty's Stationery Office. Up to the present date some 36 of these leaflets have been published.

The Economics of Building Maintenance

In the field of maintenance work, where expenditure secures no new amenities but is incurred simply in the preservation of what we already possess, exercise of the greatest possible economy is of paramount importance, and no discussion of maintenance would be complete without some reference, however brief, to the economics of the subject. In this connection a few observations can perhaps be conveniently made under three headings of (1) planning; (2) execution; and (3) recording.

(1) *Planning and Maintenance Programme.*—Maintenance work as a whole divides characteristically on the one hand into items of work individually identifiable and, on the other, into the general

bulk of day-to-day trivia which, though individually unpredictable, must yet be provided for in the aggregate. This distinction is doubtless reflected in the character of your annual financial provision for maintenance which, it may be presumed, is compounded of the estimated value of specific items of maintenance foreseen to be necessary in the financial year in question, together with a bulk provision for items of a day-to-day character, the amount provided for the latter being based on past average expenditure.

Collection of data for the compilation of a list of maintenance projects, to serve as a basis on which the year's financial requirements can be estimated, is not a matter for last minute action. All through the year the supervisor who really cares for his buildings visits them with his eyes open. However engrossing the immediate business that has occasioned his visit, part of his awareness will be centred on the building he has entered. Signs of incipient trouble will register in his mind, and before leaving he will have made a note or two in the book that he invariably carries.

We are all very busy people and it is astonishing how easy it is to visit a building for some one particular purpose—a meeting, perhaps—and to leave it again without consciously giving it so much as a glance. The building surveyor needs, for the adequate discharge of his duty, such a feeling of personal concern for and pride in his buildings that it is impossible for him to set foot inside them without becoming quickly aware of a score of things which to the uncaring eye will remain invisible.

In addition to all this the surveyor will, of course, have his set times for the deliberate exploration and inspection of the less accessible parts of his structures.

The larger maintenance jobs—by which I mean those identified and provided for in your estimating as individual projects—fall naturally into the two categories of painting and repair. Unlike the innumerable types of repair job that accrue from time to time, painting is essentially a recurrent requirement and I have no doubt that you all have your recognised frequencies for the periodic washing, distempering or repainting of your buildings both externally and internally.

Redecoration Schedules

The repetitive nature of redecoration work gives importance to the systematic keeping of records and the precise form these should take merits some thought. With adequate data on previous redecoration readily available the preparation of schedules or quantities for the repeat job can be prepared with a minimum expenditure of time. They may be completed even without visiting the building in question, but such a procedure is to be recommended only to one whose knowledge of his building is detailed and up to date and who *knows* that alterations to partitioning and similar matters have not made nonsense of schedules prepared some years earlier.

With a seasonal activity such as external painting, thought should be given to the timing of contracts. Avoidance of periods of maximum competition—if avoidance is possible—may represent an appreciable reduction in tender figures.

I have no doubt that redecoration accounts for a large part of your annual maintenance budget. The materials available to the painter to-day have reached a high degree of technical excellence and reliability, and the most variable factor is the workmanship exercised in their application, particularly in the preparatory processes. If we are to obtain proper value for money in our redecoration contracts it behoves us to be knowledgeable in this field. Here is a large and important part of the maintenance function in which it is more than ordinarily important that the surveyor should both know what he wants and insist on having it—within the terms of a knowledgeable and technically sound specification on which the contractor has tendered.

Works of repair also may, like painting, require to be planned for execution at one time of the year rather than another, dependent on their nature, and although they do not suffer from the element of seasonal competition that afflicts the painting programme, there is everything to be said for their orderly planning, well ahead of the date when the work can be put in hand.

A Clear-cut Programme

If you have too many jobs running at once, either supervision will suffer or you will need to increase the supervising staff to a strength which, once the peak load of work is past, you will be unable to justify. The only defensible course of action is to draw up, on paper, a definite and clear-cut programme of maintenance work spread around the calendar as uniformly as may be and representing a load of works exhibiting a minimum of variation over the whole of the twelve months.

(2) *Methods of Execution.*—Work can be carried out by the use of directly employed labour or can be made the subject of contract. I may safely assume, I imagine, that you are all experienced in both these methods of working.

For our present purposes we need only remind ourselves of the constant care and careful organisation needed, in the direct employment of labour, to ensure the avoidance of unnecessary jobs and the dragging out of those that are indispensable.

Hasty instruction, lack of organisation and co-ordination so that, for instance, a tradesman and mate make two journeys which a moment's extra thought on the supervisor's part could have reduced to one—these details are of very real importance in a field of work in which the average value of the individual job is likely to be something less than £5.

(3) *Recording of Costs.*—When the directly employed force is the medium of working, the creation of data for cost-recording purposes may require a somewhat more deliberate effort. The indispensable instruments are the job docket and the time-sheet, and thought given to the careful design and intelligent use of these documents will be well repaid.

It may be that in certain cases—perhaps in some of the small organisations—it will be questioned whether the introduction of elaborate costing machinery is really justified. The adjective 'elaborate' in this context somewhat begs the question. Certainly a system should be no more complex than is unavoidable; the best system is the system which, while meeting the demands made on it, is at the same time the least complicated.

That some form or other of cost recording is, however, indispensable is perhaps sufficiently obvious if we merely pose the question: how are we to pursue the endless quest for improved efficiency, as reflected in the reduced cost of our maintenance, if we do not, as a matter of fact, know what our maintenance costs are?

Conclusion

The maintenance of buildings is an activity of so multifarious a character that a paper such as this can be expected to do no more than point briefly to some of the main routes along which inquiry and investigation can be further pursued. There is almost no limit to the fields of knowledge and technology which can be shown to have their relevance to the business of preserving the fabric of the structures entrusted to our charge, and it is this very variety that constitutes our chief challenge. The maintenance surveyor is, ideally, a man to whom nothing is without interest. The identification of a fungus; the economics of window cleaning; a bit of detective work in pursuit of the real cause of a structural defect; the possibilities of a new material, a new implement or a new process; all these he will give time and trouble to, not merely because it is his duty to do so but because each of them stimulates a natural curiosity and interest and, in the discovery of the right answers a pleasurable sense of worthwhile activity which is its own most satisfying reward. Even the least novel, the most automatically recurrent matters can, when adequately organised, afford the man in control the same satisfaction that is offered by the spectacle of a well tended and smoothly running machine.

Novelty and familiarity—the unforeseen and the regularly recurrent—are both aspects of the maintenance surveyor's business and their combination constitutes perhaps one of the chief dangers against which he must constantly be on his guard. While the uncommon readily commands attention, the recurrent all too easily degenerates into the habitual—at which point in time things begin to be done for no better reason than that they always have been, and the unvigilant eye fails to detect the change in circumstances that warrants modification or even abolition of the practice in question.

The achievement of good building maintenance—systematic, thorough, economic, technically up-to-date maintenance—is not to be had for the asking. Like everything else of value, it has its price. The price of good maintenance is in fact the same as the price of liberty and that, you will recall, has been named as eternal vigilance.

HOUSING IN BIRMINGHAM

City Architect's Address at Housing Centre

SPEAKING at the Housing Centre, SW1, recently, on 'Recent Housing Development in Birmingham,' MR. A. G. SHEPPARD FIDLER, FRIBA, city architect of Birmingham, said that approximately 33,600 dwellings had been completed in Birmingham since the war, all but 6,000 of these being in new building. Eleven doctors' houses and surgeries had been built, 700 garages, 96 permanent shops, 84 temporary shops and seven tenants' rooms. Schemes for 137 shops were under contract and over 200 in schemes under preparation.

Suburban sites were now largely used up, with the exception of a few infilling sites where there were difficulties with foundations. Over 100 blocks of six to twelve storeys had been completed or were under construction.

The present policy of the City Council was to provide 30 per cent. of all housing in tall blocks, with the balance in four-storey maisonettes and a few two- or three-storey houses and bungalows to meet the needs of larger families and old people and to give genuine mixed development. To-day, 75 per cent. of the dwellings were in flats of four or more storeys.

Birmingham, said Mr. Fidler, was now the second largest city in England, with a population of 1,117,000. It covered about 80 square miles (about two-thirds the area controlled by the LCC) and had grown very rapidly. The population was in a state of uneasy stability. There was movement in and out of the city and heavy immigration from other countries, notably Ireland and the West Indies.

Mr. Fiddler went on to say that housing development at Birmingham had been in three clearly defined stages—the old city centre, the middle ring and the outer areas. After tracing the progress of housing in the inter-war years, he said that during the last war 12,000 houses were destroyed. Under the development plan two main density zones were proposed, with 50 persons per acre in the outer areas and 75 to 120 (and in places, 140) persons per acre in the inner zone.

Redevelopment Areas

In 1947, using sweeping powers conferred by the Town and Country Planning Act, 1944, Birmingham acquired by compulsory purchase five redevelopment areas totalling 1,400 acres, of which 1,050 were occupied by housing. When redevelopment started there were 30,000 houses and 3,000 vacant house plots due to bombing in these areas. The redevelopment plan allowed for approximately only half this number to be built, owing to the need to replan these areas entirely, providing for major improvements and amenities and in particular, open space.

After the war a problem, additional to those which faced most of the big cities, was that in Birmingham the shortage of skilled trades in the building industry was particularly acute owing to the attraction of factory work. At first progress was slow, but then the non-traditional, or new tradition, builders were invited to set up their organisations in the city to contribute to house production. They worked with a small architectural staff under the city surveyor's department and several low-density estates were built. Praise was given by Mr. Fidler to the new tradition builders, many of whom were still building in the city.

When he went to Birmingham in 1952 (from the post of architect to Crawley New Town) he found two or three schemes which were then going on of special interest. One, at Chadleigh Gardens, was a small layout on Raeburn principles, another a small group of bungalows for old people, with a communal hall, and the third, a twelve-storey block of flats in the Duddeston redevelopment area. The department had also developed its own type plans, but was having to keep a programme of 4,000 dwellings a year going with a very small staff.

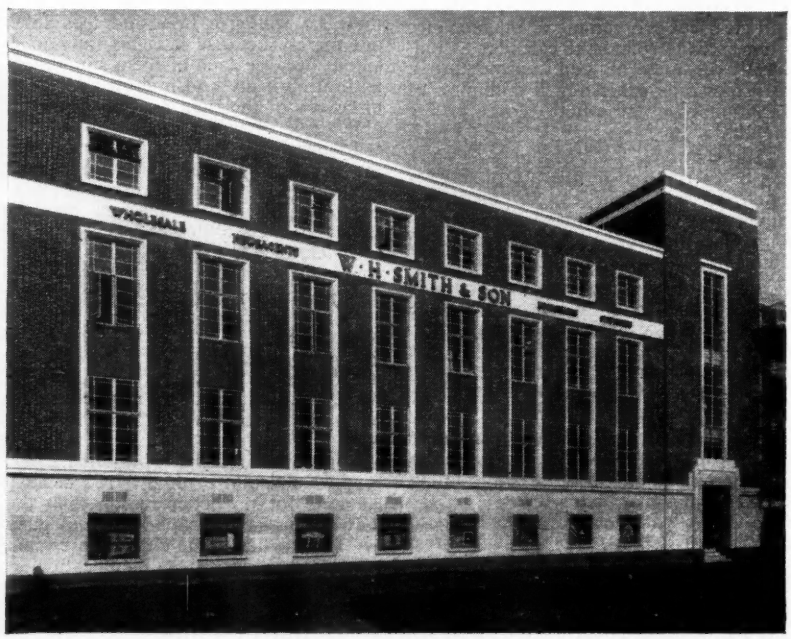
It was soon clear to him, he said, that the city was using up its available land very fast by building at too low densities and that the progress of house production was bound to slow up unless some scheme for the decentralisation of overspill was introduced. The use of new tradition builders must, he thought, continue because of the difficult labour position, but he believed better results could be obtained by integrating the architectural department's designs with the builders' structural knowledge. Standard plans must be used to the greatest possible degree.

A New Environment

Mr. Fidler felt that the speed of redevelopment must be geared to the clearance of houses and the rehousing of tenants. It was no use having small pockets of redevelopment on which the slums would close in again. Sites should be as large as possible, and as one scheme was completed adjacent areas should be cleared and unit added to unit. Only in this way would people get the feeling that an entirely new environment was being created.

In 1952 a twelve-storey block of flats was under construction and another started. These were 'prestige' schemes. They were very expensive and had elaborate amenities. It was clear to him that redevelopment could not be carried out in the form of prestige blocks, designed by commissioned architects and with little regard to cost. Something more simple and straightforward was needed. He was also convinced of the advantages of mixed development.

Then, making his plans for the future, Mr. Fidler decided there was to be mixed development in the central areas, a mixture not only of dwelling types, but of sizes also. Stress would be laid on variety and special emphasis on a good skyline. He was satisfied that the use of standard types of blocks and dwellings did not give the best densities. In suburban estates there would also be mixed development, with high blocks at strategic points—for instance, on the



NEW BIRMINGHAM BUILDING.—Bayliss House, a new building in Hurst-street, Birmingham, for W. H. Smith & Son. The eight display windows are an unusual feature incorporated at the request of the town planning authorities who originally scheduled the site for a row of shops. Mr. H. F. Bailey, LRIBA, chief architect for W. H. Smith & Son, assisted by Mr. S. J. H. Jackson, ARIBA, designed the building. The main contractors were George Wimpey & Co., Ltd.

edge of open country, parks, etc.—up to the maximum density allowed. He also wanted to introduce pockets of high density in largely built-up areas which had been developed at exceptionally low densities.

After giving statistics of the progress that had been made in post-war housing at Birmingham, Mr. Fidler said the City Council were now aiming at getting competitive tendering on basic plans, with a view to securing the benefits of contractors' structural and building knowledge. They also wanted to develop various tower blocks for flats and maisonettes and to introduce some mixed-use blocks incorporating shopping facilities, offices, health centres and other communal facilities as well as housing.

Mr. Fidler showed a number of slides illustrating housing work carried out by Birmingham City Council, chiefly since 1952. It was seen that great care had been taken in deciding what buildings should be placed close to tall blocks to bring the scale down to the ground and humanise the whole scheme; in producing the feeling of enclosure so familiar and popular in Birmingham; creating a satisfactory skyline and making the best use of the many sloping sites; in integrating ancillary buildings with housing; and in the imaginative treatment of elevations, corner sites, shops and garages.

LAND CUT FOR COVENTRY

Ministry Plan to Reduce City's Population

IN confirming Coventry's Development Plan (the city's building projects for the next 20 years), the Minister of Housing and Local Government has cut the amount of land zoned for houses and for industry. A considerable acreage on which building was expected will now remain rural at least until industry's need for additional land is more positive and is proved at the quinquennial reviews of the development plan.

The reduction of land allocated to industry by 445 acres, of which 310 acres have been reallocated for other uses, has been made by the Minister who states that excessive provision had been made both for new enterprises and for expansion of existing firms. The cuts in residential zonings follow the Minister's decision to reduce the estimated population of Coventry in 1971 from 336,000 to 330,000.

Coventry's town clerk, MR. CHARLES BARRATT, said on June 3 that he saw in the Minister's action the first deliberate gesture to fix a limit on Coventry's size.

Within the built up area of the city the most important feature of the plan is the scheduling of two comprehensive development areas of 37 acres at Spon End and 137 acres at Hillfields, the largest provincial comprehensive development area so far approved. Demolition of almost all properties in the two areas and complete rebuilding is envisaged; 615 houses are affected at Spon End and 2,173 at Hillfields.

Proposals in the plan which the Minister has approved include a special industrial estate of 17 acres for noxious industries at Rowleys Green and a low density residential area at Stivichall.

THE GRAVEL PROBLEM

The Need for Proper Restoration after Extraction

BY B. S. TOWNROE, CBE

COMPANIES excavating gravel, and selling the products to builders, are having to face opposition from various quarters. Of the necessity of regular supplies of gravel, especially at the present time when there is still widespread need of houses, apart from the new factories now being built in connection with guided missiles and other nuclear weapons, there can be no argument.

On the other hand, the Ministry of Agriculture, and the County Agricultural Committees continue to warn the general public that we are having to import about 50 per cent. of our foodstuffs from abroad, in some cases at a heavy cost in foreign exchange, and that we might find ourselves very hungry if for any reason this supply was cut off. Those responsible, therefore, argue the absolute necessity of allowing no action that might take away land required for home-grown food, including arable land used for pasture by cattle and particularly by cows.

Authorities on water are extremely critical of the creation by gravel companies of swamps and pools of water, from which there is enormous waste by evaporation. It is not generally realised that something like a ton of water is lost in 24 hours from a fair-sized tree, and many tons are lost from a gravel pit. This is an argument put forward by scientists and not widely appreciated.

There are, of course, the supporters of the Council for the Preservation of Rural England, who see many beauty spots in the British Isles being menaced by commercial interests. A recent example has been the threat to the Blackwater Valley, and already one of the prettiest lanes, Fry's-lane, which runs into the Reading Road in North Hampshire, has been utterly spoilt, and now looks like the beginnings of a concentration camp.

Recent Follies

Follies have unfortunately been committed by some rather short-sighted gravel companies. Recently the Yateley Parish Council publicly admitted that they had 'made a slip' in not preventing a gravel extraction company from demolishing without giving due notice, Chandlers' Farm, part of which was built in Tudor days. Indeed, the builder who carried out the modernisation of this farm in 1950 in order to adapt it for habitation by two families, found the roof was constructed of very solid oak, which probably had been brought from the shipyards in Portsmouth, after the breaking up of ships. In the view of this builder, Chandlers' Farm was originally a Royal Hunting Lodge on the edge of Windsor Great Forest, and there is much evidence to support that view.

The outcry produced by this precipitate action in the destruction of one of the most ancient buildings in Hampshire has resulted in official action. It is believed that all companies in the county wishing to dig below the surface have been asked to produce their plans, which they hope to carry out within the next 20 years. These plans will in due course be considered by the Hampshire County Planning Committee, who will decide whether or not to give permission for further excavations, and if so on what condition.

It is little wonder that some of the more progressive and enlightened gravel companies as, for example, Inns and Co., now at work in nine counties, have been filling in pits made by excavations, and so restoring the land to grass. There have been so many discoveries in recent years of fertilisers which quickly make soil suitable for agriculture, and also a good deal is being learnt from the methods used in restoring the land spoilt by the opencast coal mining, which has been such a curse from the amenities point of view in recent years.

A New Factor

Another new factor in this struggle between the needs for gravel and the needs for grass is the reduction in the Services. The fewer men serving in the Navy, Army and Air Force, the less land will be required for training. Many thousands of acres have already been given up by the War Office. Some of this land has gravel underneath, and in any case was such rough land as to be unsuitable for growing food.

Gravel companies are, in fact, to-day on trial at the tribunal of public opinion. If they make full use of the resources of modern science in filling in pits and restoring the land to grass, and if they limit their future activities as far as possible to rough land given up by the Services, much of the present opposition will no doubt be weakened. This would be a welcome compromise, for of the need both of gravel and of home-grown food there can be no question. But the directors of gravel companies should refrain in the future from the demolition of any buildings, especially if they have been used for housing, without consulting various authorities. Futhermore, they should bear in mind that the public to-day is more and more articulate, and that local authorities can now exercise far reaching powers in controlling, however much control is disliked, commercial activities.

It is only necessary to read the evidence given in recent weeks at public inquiries as to whether companies should be allowed to excavate land or not, to realise that this has become a question of vital interest both to agricultural and building interests. There ought to be a better appreciation of the different points of view. It can confidently be expected that in many cases in the future, the commercial companies concerned will be compelled to convert gravel pits into grass lands.

Research Association 'Open Day'

A visit to the British Cast Iron Research Association, Bordesley Hall, Alvechurch, Birmingham, has been organised for July 4. Transport has been arranged leaving New-street Station at 9.45, 10.30 and 11.30 a.m.

The Canadian Building Industry

TECHNICAL PROGRESS AND ECONOMIC EXPANSION

By ERIC FORD

SINCE building construction provides an index of a country's general economic progress it is only to be expected that the expanding Canadian economy will support a flourishing building industry. In fact, the industry has doubled its volume of production over the past ten years and, despite the present tight money situation in the Dominion, is expected at least to maintain its 1956 volume of output during the coming building season.

Within this general framework, the different sectors of the building industry are expected to move at varying rates. For example, while industrial building is expected to rise in value during 1957 by some 7 per cent., expenditure on engineering projects, including electrical generation schemes, gas and oil pipe line installations and mining construction, is expected to increase by 14 per cent. Business construction, which, as defined in Canada includes schools and hospitals as well as offices and stores, is considered likely to expand by some 5 per cent.

In the industrial sector, a significant pointer is the continuing increase in contract awards, with a trend towards sites in suburban and small city locations as major companies continue to implement their decentralisation policies. Business building is expected to be concentrated on the building, expansion and modernisation of stores as the big chain concerns push ahead with plans for 'supermarkets' across the country.

On the other hand, in the residential sector, a fall in output is thought possible, mainly for financial reasons. Estimates place the likely number of completed houses this year at 110,000, compared with 135,000 in 1956. This depends to a large extent, however, on the rate of immigration. A big increase in the influx of new arrivals in Canada, which must be considered a distinct possibility, could change the situation as would any important relaxation in the financial 'squeeze.'

Housing Construction

Faced by this situation, those concerned in residential housing construction believe that the best hope of maintaining the present level of building is to produce good quality houses at a price within the reach of the lower income brackets. This, however, will have to be achieved in the face of rising labour costs, high interest rates and the more stringent standards imposed in connection with construction methods and planning control. It is therefore felt to be of particular importance for the industry to produce well-constructed houses without frills. At the same time, leading members of the industry consider that the Government could play its part, pointing out among other things that although the Federal Government places 'end price' controls on builders, no similar controls are placed on land prices.

Meanwhile, at the other end of the scale, the construction of big projects by the Canadian Federal Government shows no signs of falling off in the future. Not only has the backlog which piled up during the Second World War not yet been cleared, but the needs of Canada's rapidly growing population in respect of Government-provided facilities will require to be met.

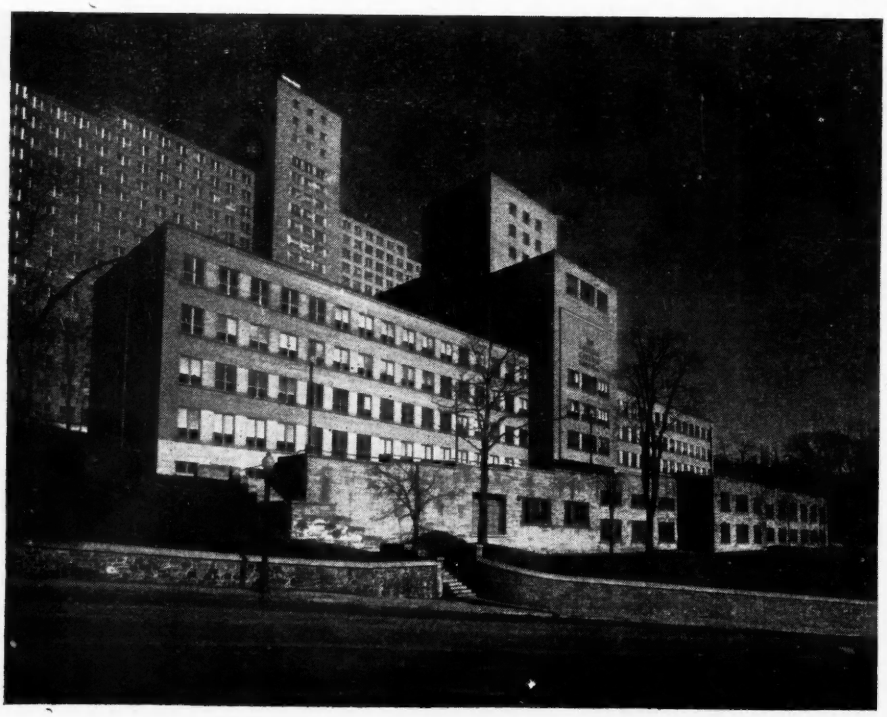
Construction of Government buildings in Ottawa alone will total some 15,000,000 dollars this year, including a Post Office administration building, a Public Works office and a Government testing laboratories building. Among many other large-scale projects to be initiated elsewhere in the country this year are a seven-storey Federal Office building in St. John's, Newfoundland, a 15-storey Post Office building in Toronto, a 10-storey Federal building at Edmonton and important Post Office installations in Vancouver.

Behind this massive construction programme lies an impressive range of building research designed to facilitate the increased output which the industry will be called upon to produce in the immediate future. Established in 1947, the Division of Building Research of the Canadian National Research Council is currently engaged on a number of research projects at its Ottawa headquarters as well as at its stations at Vancouver, Saskatoon, Halifax and Norman Wells (Northwest Territory).

Because of the wide use of timber in the Canadian building industry, research work into fire prevention has always played an important part in the Division's work. Last year a special study was made of all fires in the Province of Ontario, and methods are being considered whereby casualties can be reduced and building losses avoided. The use of models in studying the spread of fires has been further extended.

Housing studies are also continuing in association with the Central Mortgage and Housing Corporation and the National House Builders' Association. Much of the work is designed to meet the special problems which face builders in the rigorous Canadian climate. For example, field studies are being undertaken into the effect of freezing of the ground beneath flat slabs when used for house foundations.

Of particular importance to Canada is the research which was recently started into the use of wooden roof trusses for small houses, with particular reference to the heavy snow loads which they are called upon to bear in many parts of Canada for considerable periods of the year. Following preliminary investigations, a pilot study of actual snow loads on roofs has been instigated at nine selected locations in the Dominion. The



MONTREAL GENERAL HOSPITAL.—A view from Pine-avenue of the staff block of this hospital, completed in 1956. The hospital block itself is in the background

results of this research, which, however, are not expected for some time, will be useful in connection with the snow load requirements of the National Building Code.

Other research programmes which are in hand include some work on farm building and construction throughout Canada and a study of the application of modular co-ordination to building components and to building design. Building materials are also the subject of considerable research. Work is taking place on the properties of asphalt shingles, on problems associated with concrete (with special reference to the occurrences of aggregates which produce undesirable expansion) and on problems of light-weight concrete.

As part of the Division's programme of fundamental research, basic studies are being made in the movement of moisture in solid materials. This study links the properties of many building materials with those of soils and is given special point by some studies previously carried out in central Ottawa where settlements of house structures, long known to be serious, are now shown to be due to changes in the moisture content of local soils.

Building in Winter

Another problem of great interest to the Canadian construction industry is the restriction which the winter climate places on building activity. Ways and means of increasing construction work during the winter months are under consideration by the appropriate section of the Division of Building Research. The results of the conference on winter concreting in Copenhagen are being carefully studied.

For nearly 40 years the Canadian Standards Association has included building materials and construction methods within its scope, with the object of saving materials and labour costs. Current work is mainly in three directions, including savings due to the use of standardised building elements such as doors, windows, etc., the application of dimensional (or modular) co-ordination and the revision of building codes to permit the use of more economical materials or building methods.

Eventually it is hoped that with building materials completely standardised on a modular basis and properly correlated to each other, many hours of on-site labour will be saved and much present waste of materials avoided.

To sustain the heavy construction programmes which undoubtedly lie ahead of the Canadian building industry, a large, skilled labour force is necessary at all levels and there are doubts as to whether sufficient apprentices are entering the industry to allow for future expansion. An active approach is being made to the problem by the provision of improved training facilities, including the institution of pre-training courses and preference for apprentice schemes organised by trade bodies rather than by individual employers.

A recent report from Halifax, Nova Scotia, for instance, underlines the problem. 'Selection of good apprentices has always been a difficulty in our building trades and this year the local committees for the carpentry and electrical trades selected one class of apprentice for each trade, indentured them to the committee and are providing them with six months' pre-employment training. It is hoped that this will provide a better type of tradesman and a more acceptable apprentice to the employer.'

It is therefore clear that the Canadian building industry is looking forward to a continued period of expansion and development. It is equally clear that the industry is facing its problems with realism and energy.

Russia's Hydro-Electric Development

REPORT ON USSR VISIT BY BRITISH DELEGATION

A REPORT on the visit to Russia last year of a group of six engineers interested in hydro-electrical development has been published by the Institutions of Civil, Mechanical and Electrical Engineers. The delegation was appointed by the Institutions in association with the Soviet Relations Committee of the British Council. They were: Sir John Hacking, MIEE, leader of the team; Mr. A. A. Fulton, FRSE, BSc, MICE; Dr. S. P. Hutton, PhD, MEng, AMICE, AMIMechE.; Dr. W. MacGregor, DSc, AMICE; Mr. R. W. Mountain, BSc, MICE, MIEE; Mr. H. West, MIEE.

The report shows that it is expected that by 1960 the total electricity generated in the USSR will be three times as much as in Great Britain; at 320 billion kilowatt hours against an estimated figure of 110 billion for the CEA.

Private citizens of the Soviet Union who want to use electricity in their homes must pay 30 kopeks a unit. Industry may have to pay between 1 and 6 or 7 kopeks, depending on its importance in the eyes of the State. If the real value of the rouble is assumed to be 45 to the pound sterling, this makes USSR electricity some of the cheapest in the world, the cost to industry almost negligible and the cost to the private individual at 1.6d. a unit, only slightly higher than in Britain.

Extensive Tour

The team, leaving on October 10, 1956, travelled over 4,400 miles in the Soviet Union by road, rail and air, were received by Mr. Molotov, head of the Ministry of Power Stations, and saw hydro-electric schemes, research laboratories and factories. They learned of the development of combined electricity and heat supplies for urban areas, particularly suited to the climate and the large blocks of flats in which officials and workers live—30 per cent. of the total capacity of thermal generating stations is in combined stations. They were told of the Russian lead in installing high voltage direct current transmission lines over the 800 km between Kuibishev and Moscow similar to those to be installed for the new cross-channel cable, and learnt that by 1960 from 40 per cent. to 45 per cent. of all rail freight will be hauled by electric locomotives.

The estimated hydro-electric potential based on 1,477 rivers in the Soviet Union is about 1,500 billion kilowatt hours per annum, 80 per cent. of which is in the under-populated lands east of the Ural mountains. This partly explains why in 1955 hydro-electric schemes were only providing 13.5 per cent. of the country's electricity requirements, and it is estimated that even by 1960 only 4 per cent. of total potential hydro-electric power will have been harnessed.

At the factories making hydro-electric plant it was found that designers work on a competitive basis. The greatest emphasis is placed on the cheapening of the cost of the products so as to make a bigger profit, as there is a connection between the bonuses paid workers and factory profits. Factory hours were a 46 hour normal week of eight hours a day, and six hours on Saturdays. Overtime was paid at time and a half for the first two hours and double time thereafter.

Spectacular Projects

'The most spectacular developments seen by the delegation were those on the Rivers Volga and Dnieper, particularly the former. This river (including its main tributary the Kama) is planned to have a total of 12 generating stations with an installed capacity of 10,264 MW and an annual production of more than 50 billion kilowatt hours.

Seven of these stations are already operating, and by the end of 1960 eight will be fully commissioned with a total capacity of 6.324 MV, whilst three others will be in construction. Two of the stations, Kuibishev 2,100 MW — and Stalingrad—2,300 MW—will be the largest capacity hydro-electric stations in the world,' states the report. Two even bigger stations are under construction in Siberia.

It was found that the fullest possible use is made of mechanisation, and very careful study is given to constructional planning. Prefabrication is used for producing such items as concrete facing slabs, welded reinforcement units and cofferdam panelling.

'The general conclusion reached is that Russian engineers are not lacking in engineering ability when dealing with the varied problems met with in river control and development works. Nor are they lacking in courage and ingenuity in planning and constructing structures on permeable foundations and made-up ground,' it is stated.

Timber Lecture Course

A series of lectures and discussions on 'Timber Building and Engineering' is being organised by the Timber Development Association, Ltd., for October 12-15 at Lodge Hill Residential College, Pulborough, Sussex. Details can be obtained from the Regional Officer, 8, St. George's-place, Brighton 1.

Fuel Economy Technique for Oil-Fired Central Heating

THREE MAIN ASPECTS EXAMINED

A PAPER by MR. P. DRAPER, MIMechE, FInstPet., on 'Fuel Economy Technique for Oil-Fired Central Heating,' was read by Mr. A. B. Pritchard owing to Mr. Draper's illness, at the London Building Centre recently.

Three aspects of fuel economy were dealt with in the paper: efficient combustion and heat transfer, economical regulation of heat within the building and reduction of heat losses. The author began: 'It is of first importance to burn the fuel fully and then to transfer as much of the resulting heat as possible from the combustion gases to the hot water or hot air, as the case may be.

'Most manufacturers claim that their apparatus is capable of 80 per cent. efficiency or more, whereas, due to various considerations, figures ranging from 50 to 70 per cent. are more common in use. There are really three types of heat loss in the boiler: (a) incomplete combustion; (b) insufficient heat transfer to the working medium (expressed as 'flue loss'); (c) high boiler radiation losses to the boiler room. These factors affect all types of oil burner, whether they be fully automatic pressure jet systems, spinning cup burners, low pressure air atomisers, pot type vaporisers, or perforated cell vaporisers.

'Incomplete combustion may result in the discharge of carbon or smoke which, in turn, fouls the boiler and reduces efficiency. In actual tests, using a high-grade distillate fuel, a fairly heavy smoke caused a loss in boiler efficiency of 12 per cent. after 14 days of operation. On the other hand, just visible smoke caused a loss of only 2 per cent.

The Smoke Meter

'To check for this sort of loss we can use a simple instrument known as a smoke meter, in which a specified quantity of flue gas is drawn through a filter paper, and the stain on the paper is compared with standard shades. The smoke number ranges from 0 to 9. The just visible level is equal to No. 6 and a dense black to No. 9.

'In burner tests carried out in the Shell laboratories, the maximum permissible smoke is fixed at No. 5. In checking up a boiler for efficient combustion, this is the first target, and it can generally be achieved in well-designed and well-maintained equipment by adjusting the air supply.'

The quantity of fuel lost up a flue was a function of two factors—the temperature and quantity of the gas. A stack temperature of 350 deg. F. and a minimum of excess air over that required for complete combustion is equivalent to a stack loss of about 13 per cent. If excess air has been admitted accidentally or by leakage, two very common occurrences, the loss at the same temperature of 350 deg. F. can be twice as much, or 26 per cent.

'After checking the air register,' he pointed out, 'a thorough search should be made for air leaks by going over a boiler with a lighted taper or by blowing cigarette smoke in suspected areas. All such leaks should be thoroughly plugged with asbestos rope or fireclay.

'Simple instrumentation is required to check up scientifically on the stack losses. First, the smoke meter, then a thermometer in the 200-800 deg. F. range to measure stack temperatures, and then a CO_2 meter to measure the carbon dioxide content of the flue gases. If the CO_2 is high, the smoke negligible, and the stack losses still high, then the load is probably too big for the boiler and an economiser fitted in the flue may save up to 20 per cent. of the fuel.'

'Staggering Savings'

Some staggering savings could be achieved with relative ease. The building should first be surveyed to find out what was the minimum temperature really necessary, making allowance for adequate but not too much ventilation. Then modification should be considered for conditions, of night and week-end periods. Then provide just this heat, no more.

'The ideal arrangement,' the speaker continued, 'would be to have thermostats in each room, or each group of rooms, which could adjust the heat supplied by its radiators, but this is usually too expensive. A more realistic proposition would be to have a master thermostat on each branch of a heating system. Failing this, the only, and not too satisfactory, alternative is to control the temperature at the boiler room, either manually or by specially devised instrumentation.

'For every hour that the burner is off, nearly 100 per cent. saving is effected. (Some losses of heat still occur from the building structure, which have to be made up when the plant is re-lit.) If a building is occupied for nine hours a day, fuel can usually be cut off for 12 hours, representing a 15 per cent. saving compared with a building heated all the time.'

On the reduction of heat losses, he said: 'This is another aspect which concerns the architect and installation engineer more than the boiler or burner manufacturer. It is relatively easy to make appreciable fuel savings: (1) within the boiler house; (2) in pipes and ducts; and (3) building losses. The answer to heat losses from the boiler house is lagging—lag everything that is hot. A 2 in. steel pipe containing steam at 350 deg. F. located in an atmosphere of 50 deg. F. radiates the heat equivalent of 180 lb. of fuel oil per foot of pipe in a year of 210 days. At this rate, 12½ ft. of such unlagged pipe uses a ton of fuel oil in this working year.

'Lagging such pipes is the answer. For instance, 1½ in. of moulded granulated cork saves 80 per cent. of such heat loss, but even strips of hair felt will save 70 per cent. if applied to a thickness of three-quarters of an inch.

'The heat losses from an average domestic hot water system in a private house are nearly four times as great as the actual hot water requirement. By reasonable lagging, and by building the hot cylinder into a linen cupboard, the losses can be brought back to a figure below that of the hot water offtake.'

Another source of loss was by conduction through the walls, floors and ceilings of rooms. If we considered a room 20 ft. square with an inside temperature of 65 degrees and a loft temperature of 35 degrees, the heat loss was about 7,000 British thermal units per hour, or equivalent to the output from a 2 kw. electric fire heater. If a one-inch layer of fibreglass was laid over the joists above the ceiling, the loss would be reduced to less than a third.

'A BLITZ ON THE BUILDER'

CUC's Plan for the Coming Year

SPEAKING in London on May 27 on the annual report of the Coal Utilisation Council, now issued, MR. J. S. WILLIAMS, the Council's director, emphasised that, despite the advances in nuclear power and the greater use of oil, there were no grounds whatever for regarding coal as an outmoded fuel, for in the forseeable future the contribution of these sources of power would be only marginal, and even in 20 years' time the country would still rely on an expanded coal industry for more than two-thirds of its power requirements.

Looking ahead, Mr. Williams said: 'This year we are going to concentrate very much on the private builder. Why this blitz on the builder? There are three main reasons. In the first place, there has been a large increase in private building. Secondly, the builder has a great deal of influence when his client is discussing the equipment of his house, and we are by no means convinced that the average building contractor has advanced very much in the last 100 years so far as his knowledge of heating equipment is concerned. Thirdly, the new solid fuel appliances cannot heat effectively unless they are installed correctly.

'Last year, as the result of discussions with the building industry, we set up a joint working party to try to ensure as good a supply of qualified appliance fixers as of other skilled trades.

'The joint working party has just issued its report which is now under discussion by the building industry. Very briefly, it aims at providing technical college courses in appliance installation for building operatives and apprentices. Those who successfully passed the courses would receive a certificate, and every building firm that employed, according to size, an appropriate number of certificated men would be awarded a CUC Diploma and would be included on a panel of approved fixers.

'The CUC would then seek the co-operation of national and local government departments, architects, the building and allied industries, and the appliance retailers to ensure that only panel firms would be employed for appliance fixing.'

CONCRETE FLOOR CONSTRUCTION

Some Current Trends and Comparisons

From a Correspondent

In the following article some conclusions drawn from a study of recent Russian and British experience in the use of wide-slab precast floor units are outlined. The author goes on to refer to a study made by Messrs. North, Neighbour and Nicholson, chartered quantity surveyors, of 5 in. deep concrete floors of varying methods of manufacture—i.e. *in situ* cast; precast on site; and precast at factory—and comments on the finding that there appears to be a substantial saving to be made by using the factory-made precast unit.

MANY building contractors are, at this moment, keenly interested in drawing comparisons between the cost and convenience of laying *in situ* concrete floors and using site-made or factory-made wide-slab precast floor units. During the past two or three years considerable experience has been gained, both in Britain and in certain overseas countries, in the use of wide-slab precast floor units. This has shown that the price gap between *in situ* concrete floors and precast concrete floors is continuing to widen in favour of precast work. Wide-slab precast floor units are growing in popularity and may well soon become one of the most frequently employed types of floor construction. A survey of the present position may therefore be of immediate practical value.

Overseas, the most spectacular large-scale application of wide-slab precast floor units is in the USSR. In Britain, major interest was aroused by the use of site-made wide-slab floor units at the London County Council's Picton-street flats and, more recently, by the use of factory-made wide-slab floor units at the Barking Borough Council's Thames View Estate flats. Conclusions which may be drawn from a close study of recent British and Russian experience are listed in Table 1. These are discussed in what follows.

Table 1

CONCLUSIONS WHICH MAY BE DRAWN FROM A STUDY OF RECENT BRITISH AND RUSSIAN EXPERIENCE IN THE USE OF WIDE-SLAB PRECAST FLOOR UNITS.

1.—Overwhelming economic advantages may be gained by the general displacement of *in situ* cast concrete floors by site-made or factory-made precast wide-slab floor units.

2.—If standardisation is carried too far, the maximum possible economic advantages which may be gained by use of precast wide-slab units may be somewhat reduced.

3.—A very high degree of flexibility is achievable when using precast wide-slab floor units.

4.—Factory-made wide-slab floor units can be significantly lower in total cost than site-made precast units.

5.—Full economic advantage of site-made wide-slab floor units is possible only if there is adequate room for site-casting operations, if the work is very well organised, and if the total quantity of repetition work is quite appreciable.

6.—Full economic advantage may be taken of factory-made wide-slab floor units under conditions which might not justify the use of site-made units. Furthermore, under conditions which do justify the use of site-made floor units rather than

Fig. 1.—*Factory-made precast wide-slab floor units and precast frames during flat erection at Moscow.* *Fig.* 2.—*Factory-made wide-slab floor slab being placed in position at Thames View Estate flats.* *Fig.* 3.—*Wide-slab floor slabs in position on curved end block of Thames View Estate flats*

Fig. 2.

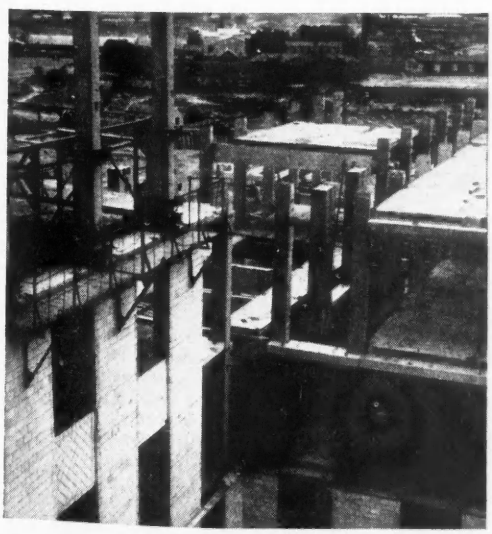


Fig. 1.

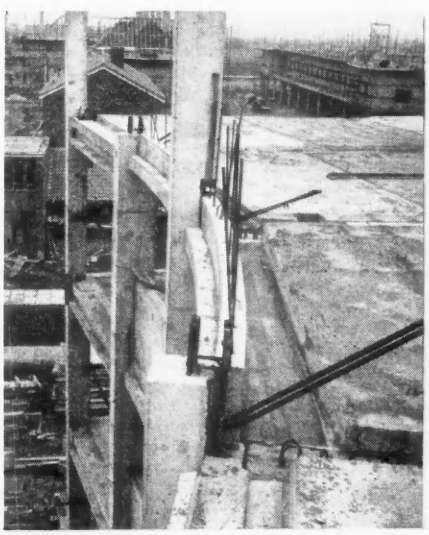


Fig. 3.

in situ cast floors, the use of factory-made wide-slab floor units would probably show a significant saving.

Standardisation in Russia

Interesting comparisons between British and Russian practice in concrete floor construction have been rendered possible as a result of a visit to the USSR by a delegation representing the Reinforced Concrete Association*. This visit was in June, 1956, and followed visits of Soviet delegations to British precast concrete factories and buildings under construction in September and in November, 1955. The British delegation included the author of this survey and it visited precast concrete factories and buildings in progress in Moscow, Leningrad and Stalingrad.

It was found that traditional methods of building construction have, since 1954, been partly abandoned in favour of precast construction. Precast concrete floors have been used in Russia since about 1933, in conjunction with steel frames or load-bearing brick or stone walls. However, present-day usage is on an altogether larger scale. It is coupled with standardisation to a degree unimaginable in Britain. For example, in all the new precast concrete factories visited, two types of precast floor unit only were in production.

Among the reasons given for wholesale and nation-wide change-over to precast concrete construction and enforcement of far-reaching standardisation were the following: (a) the need to reduce lost time due to stoppages on account of weather conditions; (b) the ability to take fuller advantage of mechanisation in the factories and on site; (c) the expectation that precast concrete construction will prove to be increasingly economical in comparison with traditional building methods.

The rapidity with which precast concrete construction is to be expanded may be judged from the following figures. In 1955 the total output of precast concrete units was 5 million cubic metres, measured overall. The bulk of this consisted of reinforced concrete floor slabs, together with landing and roof units. In addition, prestressed beams, reinforced beams, columns and staircase units were produced. The planned output for 1960 is to be 28 million cubic metres, of which 25 per cent. will consist of prestressed units, mainly floor slabs.

Standardisation is based upon the overall dimensions of basic rooms. These are approximately 3 metres wide (or long) and 3 metres high, internally. Corresponding overall dimensions, including allowances for walls and ceilings, are 3·2 metres. In practice, rooms vary in width (and length). Bigger rooms may be 6·4 metres long. Others are 4 metres long or wide. Beam and column lengths are standardised at 6·4 metres. The columns, of course, span two storeys and the beams may span one or two rooms.

Precast reinforced concrete floor units are either (a) 6.4 metres long and 22 cm. deep, or (b) 3.2, 3.6 or 4.0 metres long, and 19 cm. deep. In both cases they are made in a variety of widths in multiples of 40 cm., common widths being 120, 160 and 200 cm. Prestressed concrete floor slabs are similar in dimensions to the 19 cm.-thick reinforced concrete slabs.

*Murdock, Beckworth, Mathews and Wood, 'Concrete Construction in the Soviet Union,' Reinforced Concrete Association, December 12, 1956.

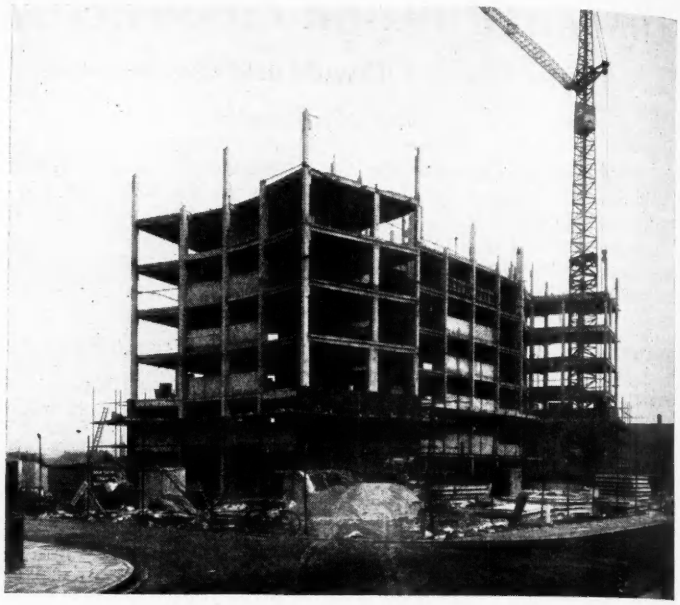


Fig. 4.—Thames View Flats, showing rectangular and non-rectangular factory-made precast wide-slab floor units

Flexibility Achieved

If one compares the weights of Russian and British floor slabs of similar span and thickness it will be found that British units are up to 25 per cent. lighter for ordinary reinforcement and up to 40 per cent. lighter for prestressed concrete. These differences are most marked in shorter spans and may be taken as the price which must be paid for standardisation, if carried beyond a certain point.

Actually, it is quite possible to carry out a valuable measure of floor slab standardisation without producing units which, for certain purposes, are heavier and therefore more costly than they need be. This necessitates employment of highly flexible production techniques, availability of a wide range of alternative standard depths and cross-section types, and very skilful design generally. A further advantage of floor slab production, if so set up, is the ability to produce economically a wide variety of non-rectangular floor slabs alongside production of standard units. Flexibility can go hand-in-hand with standardisation.

The influence of production methods upon flexibility may be illustrated by referring to some of the new Russian precast concrete factories. These, generally, are very highly mechanised. Some of the specially designed machines, however, although undoubtedly capable of high outputs, are inflexible inasmuch as each machine tends to produce a narrow range of product sizes. Production methods employed in some British factories are much simpler although equally effective from an output viewpoint. They are, moreover, superior because they do not narrowly restrict the range of product shapes and sizes; nor do they in any way hamper the work of the designer.

A typical example of flexibility is in the use of precast wide-slab floor units at Thames View Estate nine-storey flats, Barking. These are designed in the form of three blocks. The centre block has tapering extremities linking on to outwardly splayed more or less concave side blocks. Although a good deal of rectangular floor slabbing was employed, it was necessary also to employ a fairly large quantity of non-rectangular floor slabs. The whole of the flooring, with a few exceptions was carried out in factory-made precast concrete wide-slab floor units. These, generally, were approximately 7 ft. 6 in. wide for the rectangular slabs, and for the non-rectangular slabs as wide as necessary, but not wider than this figure. One important advantage was the incorporation, throughout, of clearance holes and cut-out sections for sanitary, water and other services. The whole of this work was, of course, carried out in the factory. The point is that normally employed precast concrete production methods do not hinder manufacture of a considerable proportion of non-standard shapes and sizes of wide-slab floor unit. Nor do such 'specials' necessarily have to be very expensive.

Why use Wide-slab Floor Units?

Where wide-slab floor units are applicable, their use instead of narrow-slab floor units may be associated with definite economic advantages. These may be summed as follows: (a) reduced cost of manufacture; (b) reduced handling cost; (c) reduced laying cost; (d) reduced cost of trimming on site. For these reasons wide-slab floor units are becoming popular amongst established

users of precast floor units. Incidentally it should be remembered that wide-slab floor units were used on a number of contracts a considerable time before popular attention became focused upon them. For example, wide-slab units were used about three years ago by George Wimpey and Co., Ltd., in connection with no-fines construction dwellings in Scotland.

However, it is amongst the building contractors who would normally employ *in situ* cast concrete floors that wide-slab floor units may have their greatest appeal. Cost studies, recently carried out by Messrs. Northcroft, Neighbour and Nicholson*, Chartered Quantity Surveyors, have shown that both types of precast wide-slab floor units are considerably cheaper than *in situ* cast concrete floors, and that factory-made units are appreciably cheaper than site-made units.

Comparative Costs

Three types of concrete floor construction were studied by Messrs. Northcroft, Neighbour and Nicholson: (a) 5 in. deep *in situ* cast reinforced concrete; (b) 5 in. deep precast on site reinforced concrete solid section wide-slab floor units; (c) 5 in. deep precast at factory reinforced concrete hollow-beam wide-slab floor units. Floors 5 in. deep were selected for study because it was considered that these would most likely be encountered in the construction of multi-storey buildings such as flats. The calculations were based upon 12 ft. spans, normal domestic loads, allowances for formation of holes for services, the use of soffits keyed for plaster, building sites in the Greater London area, and prices ruling in January, 1957. The costs for the three types of floor construction are given in Tables 2, 3 and 4.

Table 2

COST OF CONSTRUCTING 5 IN. DEEP, 12 FT. SPAN, *in situ* CAST CONCRETE FLOOR FOR NORMAL DOMESTIC LOADS, GREATER LONDON AREA, PRICES RULING IN JANUARY, 1957.

Item	Cost per yd. sup. s.	d.
Concrete	15	1
Formwork	18	0
Reinforcement	7	8
Allowances for making holes for services	1	0
	41	9
Overheads and profit at 12½ per cent.	5	2½
	46	11½
Labour expenses and insurance (normally priced on Summary Travelling time, fares, Third Party Insurance, etc.)	2	4
Total cost	49	3½

Note: It should be borne in mind that a fair proportion of the cost of formwork is in the putting up and taking down and also in the use of mould oil, cleaning, etc. These operations occur each time the formwork is used.

*Cost investigation on concrete floors, Messrs. Northcroft, Neighbour and Nicholson (private investigation).

Table 3

COST OF MAKING AND LAYING SITE-MADE PRECAST SOLID REINFORCED CONCRETE WIDE-SLAB FLOOR UNITS, 5 IN. DEEP, 12 FT. SPAN, FOR NORMAL DOMESTIC LOADS, GREATER LONDON AREA, PRICES RULING IN JANUARY, 1957.

Item	Cost per yd. sup. s.	d.
Concrete	12	6
Reinforcement	7	8
Use and waste of casting bed ...	2	11
Allowance for making holes ...	1	0
Use of vacuum plant for early extraction of moisture	2	0
Use of mobile crane for stacking units and transporting to tower crane position	2	0
Lifting hooks		3
Hoisting into position	2	1
Bedding		9
	31	2
Overheads and profit at 12½ per cent.	3	10½
	35	0½
Labour expenses and insurance, etc., as before at 5 per cent.	1	9
Total	36	9½
say	36	10

Table 4

COST OF PURCHASING AND LAYING FACTORY-MADE PRECAST HOLLOW WIDE-SLAB FLOOR UNITS, 5 IN. DEEP, 12 FT. SPAN, FOR NORMAL DOMESTIC LOADS, GREATER LONDON AREA, PRICES RULING IN JANUARY, 1957.

Item	Cost per yd. sup. s.	d.
Units delivered to site	27	8
Hoisting into position	2	1
Bedding		9
	30	6
Overheads and profit at 12½ per cent.	3	10
	34	4
Labour expenses and insurance, etc., as before at 5 per cent. of hoisting into position and bedding costs only . . . 1¾d. or, say, 2d.		2
Total	34	6

Note: It would be reasonable to assume that as the units are carried in the manufacturer's transport and delivered ready to lay, the overhead charges corresponding to their purchase price would be somewhat lower than those corresponding to the cost of site organisation, site machinery, etc.

The main advantage, however, lies in the speeding up of the construction of the whole project, and it is this which reduces overheads to an important degree.

The figures given in the tables are believed to be truly representative of present-day conditions. Of course, in a given instance, the actual cost of *in situ* cast work may be somewhat above or below the figure quoted in Table 2. However, even under the most favourable conditions, assuming that the cost of the formwork could be reduced by as much as half, which is considered impossible, the very lowest cost for a large contract, 38s. 8½d. is still significantly higher than that for precast wide-slab floor units. Actually, on a considerable number of sites the cost would probably be nearer the higher figure. And, quite apart from comparative cost considerations, there are other factors which may render the use of *in situ* cast floors disadvantageous. For example, a fairly large space is required for plant and materials. This may not easily be available. Then, too, in some areas it is not always so very easy to get carpenters and the preparation of formwork may be hindered.

APPENDIX

Notes on Comparative Costs of Concrete Floors : Site-made or Factory-made Wide-slab Floor Units.

BOTH SITE-MADE and factory-made wide-slab floor units are increasing in popularity at the expense of *in situ* cast floors. There is no doubt at all about the continuation of that trend. Both types of floor construction are here to stay, but, it must be said that, other things being equal, factory-made wide-slab floor does appear to be a better economic proposition. And, as a matter of interest, careful examination of the costings for both types of floor construction suggest that factory-made units are capable of being even more economically advantageous than might at first sight appear to be the case. If this view point is accepted—and it seems to be fully justified—one would expect the output of factory-made wide-slab floor units to grow very much faster than the output of site-made units. In fact, one would expect site-made units to be employed only on sites which are a long way from precast concrete factories.

The figures given in Table 3 are based upon site-making of wide-slab units for quite a large contract, no less than 4,800 yds. sup. for one casting bed. The total capital cost of the casting bed, including preparation of the site and clearing away, was written off against this output, the bed itself being on open ground. Now, if the quantity of precasting called for is much less than 4,800 yds. sup., the figure quoted for use and waste of casting bed, 2s. 11d., would be increased, thus raising the final cost of 36s. 9½d. per yd. sup. Then, again, an allowance of 2s. per yd. sup. was made by the quantity surveyors for the use of vacuum plant. Many contractors would, no doubt, query this item. However, what alternative is there? If vacuum plant were not used it might be necessary to double the size of the casting yard, thus substantially increasing the item already referred to under this heading, 2s. 11d., to a much greater figure.

On many sites there will be insufficient room for the storage of concreting materials and plant and for provision of a large casting bed, as required for economical production of floor units. The Building Research Station is known to be very interested in studying ways and means of improving the organisation of work when carrying out site-production of precast concrete. However, it will not be at all easy to avoid congestion and double handling on the majority of sites, unless ample ground space is available. It is in such matters, as well as com-

parative costs, that the use of factory-made floor slabs offers important advantages. For example, no space is required on site, other than that required for the unloading of lorries delivering units for direct pick-up by the crane. A small buffer stock is much more easily organised if using factory-made units.

Production of units on an open site would undoubtedly be held up by weather during the average winter, which does not affect factory production.

Another important advantage of factory-made units is that the building contractor does not have to pay for the organisation and supervision entailed in direct manufacture. This, in practice, may account for a large proportion of the sum set aside for overheads and profit in the quantity surveyor's calculations. In comparison, the 12½ per cent. allowed for overheads and profits in Table 3 is probably over-generous with respect to overheads corresponding to the units being delivered to the site. These are by no means as expensive, from an overhead cost point of view, as are site-made units. It follows that one could make out a very strong case justifying a substantial reduction in the total cost of factory-made floor slabs. This is hardly possible for site-made floor slabs.

Mechanical Handling in Relation to Construction and Design

The low erection cost of precast wide-slab floor units depends upon the economic working of a tower crane or other equivalent lifting equipment. It is obvious that the largest possible size of precast wide-type floor slab, which is consistent with the maximum crane capacity, will normally be the cheapest to handle. In this case hollow-beam factory-made wide-type floor slabs will have an added advantage over solid slabs of similar size, in that the weight limit will not be reached so soon. Of course, one might think in terms of making hollow-beam type units on site. In practice the various technical problems so encountered, such as forming the cavities, would merely emphasise the superiority of factory production. There are many technical processes which are best carried out in a factory and for this reason, in many cases, factory-made units are capable of having extra refinements, and of incorporating design features which are difficult to obtain when site-production is carried out, unless the size of the job is so vast that it justifies erection and commissioning of a temporary factory.

A further aspect of mechanical handling requires consideration, apart from that of hoisting units into position. If factory-made units are employed no extra handling plant is called for on site. Of course, as in any well organised building site, it is assumed that the crane or other hoisting equipment is available also, as required for other site operations. If site-made units are employed, more handling is entailed and additional handling equipment may be required. Alternatively, greater demands may be made on the existing craneage. In the first instance one must take into account the possibility of an increase in the cost of site-made floor slabs due to the running and overhead costs of extra handling equipment and, possibly, extra labour. In the second instance, erection work may be slowed up because of demands upon existing cranes, etc., for the handling and quite probably the double handling of units in and out of the production area and possibly the storage area. The quantity surveyors emphasise that if site production is not very well organised indeed, and carefully synchronised with erection, the total cost of site-made floor slabs may be substantially higher than the figure of 36s. 10d. quoted in Table 3, and that any other arrangement would inevitably be very much more expensive, due to the waste of labour and plant in further handling.

The influence of building design and general layout upon the cost and convenience of mechanical handling on site is another factor which requires consideration. In this case the influence would be very similar whichever type of prefabricated wide-slab floor unit were employed. The trend is for architects to lay out their buildings taking into consideration the need for easy and economical use of tower cranes or other handling equipment, and for contractors to take maximum advantage of these possibilities.

If floors deeper than 5 in. are called for, as in factories and warehouses, public buildings, etc., further problems may arise. For example, if floor units are to be 8 in. or 9 in. deep, site-cast solid section wide-type floor slabs would be so heavy as to necessitate the use of lifting plant which would not be economical on the ordinary building site. On the other hand, factory-made hollow-beam units, prestressed if required, would be considerably lighter and easier to handle.

Comparative Costs for Deeper Floors

In their report Messrs. Northcroft, Neighbour and Nicholson discuss the comparative costs of deeper floors. Their conclusions are that for 6 in. deep floors, factory-made units would maintain their total cost advantage over site-made units, as shown in Tables 3 and 4, but the gap between site-made units and *in situ* cast floors would narrow slightly due to the same formwork being adequate. Generally, however, the comparative costs for the three types of floor investigated, would be very similar for thick floors as for 5 in. floors, it being remembered that for the thicker floors, as already stated, the increased weight of solid section slabs would further weigh the balance in favour of factory-made hollow units.

NFBTO PRESIDENTIAL ADDRESS

Claim for 40-hour Week to be pressed

IN his presidential address on Tuesday (June 18) to the 40th annual conference of the National Federation of Building Trades Operatives, MR. JAMES H. MILLS indicated that the unions would soon be submitting a claim for a 40-hour working week. Following are extracts from his remarks on this and other subjects:

The Wage Claim.—Once again our wage claim has formed one of the main occasions of our activities during the year, and in view of the general position throughout the major industries I think the settlement we have been able to achieve can be regarded as satisfactory, especially in view of the fact that it was gained without any upheaval and without strings attached. It would only be fair to pay a tribute to the employers for their part in the compromise solution.

Shorter Working Week.—We shall, I hope, before long be submitting a claim for a 40-hour working week, a goal which it should not be impossible to reach within a reasonable time, having regard to the rapid advance being made in the technological field

But here I think a note of caution must be sounded. We do well to regard a shorter working week as a main operation, which means that we should not couple it with additional demands. Our application will be for a shorter working week without reduction in the hourly rate of pay. Thus, in effect, while the weekly pay packet will remain the same, the hourly rate will need to be increased (on the calculation of a 44-hour week) by 10 per cent. in order that the same weekly wage shall be paid for a 40-hour week as for a 44-hour week. As a practical measure it may be that the reduction will have to be made in two stages—first to 42 hours, then to 40 hours.

Accidents.—The subject of accidents has also been dealt with in a very serious manner, for we view it seriously and urge all building workers to view it in a similar light. The Federation is doing what it can, as far as possible, to eliminate the cause of accidents, but here those actually on the jobs must play their part. I hold it is as necessary to prosecute workers for breach of law as it is to prosecute employers.

Demarcation Disputes.—Referring to the setting up of a special committee to deal with demarcation disputes, Mr. Mills said: 'We all, I am sure, deplore internecine strife and see how in these times of automation (a continuance or resumption of the industrial revolution) it is sheer folly to attempt a forced one-sided solution, quite out of keeping with modern trends. It is more necessary now than ever before to close our ranks and deal with the recurring problems of modern techniques in a co-operative fashion.'

Pensions.—I hope and believe that it will be possible for progress to be made on the question of pensions following our initiation of discussions with the employers. This is also a political issue as both the Labour Party and now, I understand, the Government have given it topicality by considering how best pension improvements can be made. All this activity is to the good, but it provides no reason why we should not go ahead with any scheme which we (i.e., the building employers and ourselves) may wish to promote for the specific interests of building workers.

Building Employment

The number of workers employed in the building and contracting industry in April was 1,501,000, a drop of 1,000 from the previous month and 13,000 lower than the corresponding period for 1956.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	6	7
Pit Sand	,,	1	4	0
Washed Sand	,,	1	7	2
¼ in. Shingle	,,	1	3	6
¼ in. Broken Brick	,,	1	0	9
Pan Breeze	,,		10	9
Fine or Coarse Foamed Slag Aggregate ... 2 yds. of fine and 2.6 yds. of coarse per ton.	per ton	3	5	0

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area. 6-ton loads and upwards, site	per ton	5	4	6
1 to 6 tons, site	,,	5	16	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	15	0
1 to 6 tons do. site	,,	6	7	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Sulphate Resisting Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ... Other colours according to colour.	,,	8	1	0
In 4-ton lots from 298s. 0d. to 688s. 0d. per ton.				
White Portland Cement	,,	13	5	0
Under 1 ton	per cwt.		15	10
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	17	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 8s. 0d. to £14 3s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	15	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	17	6
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	11	0

BRICKS

Full Loads.

		£	s.	d.
First Hard Stocks	per 1,000	12	17	0
Second Hard Stocks	,,	11	16	0
Mild Stocks (Kiln Burnt)	,,	9	1	6
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	18	0
Cellular do.	,,	5	18	0
Keyed do.	,,	6	0	0
Rustics	,,	7	10	0
Cellular Rustics	,,	7	10	0
Single Bullnose Commons	,,	7	12	6
Sandfaced	,,	8	10	0
Tuscans	,,	9	5	0
Saxons	,,	9	13	0
Golden Buffs	,,	10	0	0
Dapple Light	,,	10	7	6
Best Blue Pressed Staffs (London Stations)	,,	28	15	6
,, Bullnose (London Stations)	,,	29	9	6
Blue Wire Cuts (London Stations)	,,	25	19	0
Midhurst Lime Bricks (London sites)	,,	10	8	0
Uxbridge Whites (London sites)	,,	10	2	0
Special Purpose Sandlime Bricks (London sites)	,,	7	18	6
2½ in. Bes. Stourbridge Fire Bricks (London Stations)	,,	28	3	3
3 in. do. (London Stations)	,,	33	16	3
2½ in. Moler Flue Bricks (London sites)	,,	37	10	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	,,	15	8	6
2½ in. Machine-made Multi Red Facings (London sites)	,,	15	13	6
2½ in. Hand-made Sandfaced Red Facings (London sites)	,,	15	13	6
2⅝ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	per 1,000	16	8	6
Hand-made Sandfaced Cherry Red Facings, Berkshire district (London sites)	,,	18	14	0
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	,,	18	14	0
Rubber Bricks for gauged arches (London sites)	,,	42	17	6
2⅝ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	13	14	0
2⅝ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	15	6	0
Glazed Bricks (London sites), White, Ivory, Brown— Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0

Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 32½% for Best quality and plus 32½% less 10% for Second quality.

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District.)

	Minimum lorry loads		£	s.	d.
HOLLOW CLAY PARTITION BLOCKS (Keyed)					
*2 in.	140 yds.	per yd. sup.		4	5
*2½ in.	140 yds.	,,		4	8
*3 in. (3 cavity)	120 yds.	,,		5	5
BUILDING BLOCKS (Keyed)					
*3 in. (6 cavity)	110 yds.	,,		5	7
*4 in. (6 cavity)	95 yds.	,,		6	10
6 in. (8¾ in. × 5⅝ in.)	1,250 blocks	per 1,000	26	18	0
*Half blocks at no extra charge.					
CLINKER CONCRETE					
2 in.	100 yds.	per yd. sup.		3	9
2½ in.	85 yds.	,,		4	4
3 in.	75 yds.	,,		5	3
4 in.	55 yds.	,,		6	5
CRANHAM					
2 in.		,,		6	9
2½ in.		,,		7	5
3 in.		,,		8	9
4 in.		,,		10	9
4½ in. Load bearing quality		,,		11	10
MOLER PARTITION BLOCKS					
2 in.	150 yds.	,,		16	0
2½ in.	120 yds.	,,		16	6
3 in.	100 yds.	,,		17	0
4 in.	90 yds.	,,		19	9
LIGHTWEIGHT CONCRETE BUILDING AND PARTITION BLOCKS OF VARIOUS SOURCES OF MANUFACTURE					
2 in.	100 yds.	,,		5	10
2½ in.	80 yds.	,,		7	0
3 in.	65 yds.	,,		8	2
4 in.	50 yds.	,,		9	8
4½ in.	44 yds.	,,		10	4
6 in.	33 yds.	,,		13	10½
THERMALITE-YTONG PARTITION BLOCKS					
2½ in.	144 yds.	,,		7	0
THERMALITE-YTONG LOADBEARING INSULATING BLOCKS					
3 in.	120 yds.	,,		8	5
4 in.	90 yds.	,,		11	0
5 in.	72 yds.	,,		13	9
6 in.	60 yds.	,,		16	6
8½ in.	42 yds.	,,	1	3	8
FLOOR BLOCKS AND FILLER TILES					
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	34	1	0
4 in. do		,,	36	10	0
5 in. do.		,,	43	15	0
6 in. do.		,,	49	19	0
7 in. do.		,,	61	8	0
8 in. do.		,,	71	19	0
12″×3″×⅝″ Filler Tiles in multiples of 10 tiles		per 1,000 multiples	42	15	0
12″×4″×⅝″ do. do.			73	15	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Revised Standard List (Nov., 1956) prices delivered London Area.

Delivered ex Merchants Wharf or Depot or Manufacturers Works.

	Over 2 tons	Under 2 tons	Over 100 pieces	Under 100 pieces
Best Quality	−7½%	+8¾%		+15%
BSS Best do.	+10% −7½%	+10% +8¾%		+10% +15%
Tested Quality	+37½% −7½%	+37½% +8¾%		+37½% +15%
BSS Tested do.	+47½% −7½%	+47½% +8¾%		+47½% +15%

STONEWARE DRAIN PIPES, etc.—*continued*

	£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths) ... per 1,000	11	10	6
4 in. do. ... ... „	15	3	6
6 in. do. ... ... „	31	9	0
9 in. do. ... ... „	59	13	0

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.	3	9	
Asbestos base ditto 7 lb. per yd. sup. do. do. „	5	6	
Lead lined bitumen ditto 9½ lb. per yd. sup. do. „	12	6	
18 in. × 9 in. British damp course slates ... ... per 1,000	43	8	11
14 in. × 9 in. do. do. ... ... „	32	8	2
9 in. × 9 in. do. do. ... ... „	18	18	9
18 in. × 4½ in. do. do. ... ... „	19	19	9
14 in. × 4½ in. do. do. ... ... „	15	18	3
9 in. × 4½ in. do. do. ... ... „	10	14	3

STONE

Bath Stone—			
Monks Park ... ... per ft. cube	8	1½	
St. Aldhelm Box Ground ... ... „	9	1½	
Delivered in railway trucks at South Lambeth B.R. Western Region.			
Doulting Stone Random Blocks. Delivered London area „	8	11	
Beer Stone. Delivered London area ... ... „	8	5	
Portland Stone—			
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... „	8	5	
Yorkshire Stone—Blue Robin Hood Quality.			
Delivered to site London in 6-ton lots.			
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube	4	1	9
12 in. × 6 in. do. do. ... ... „	2	18	3
12 in. × 3 in. Plain coping, twice throated ... „	2	5	3
12 in. × 3 in. Weathered and twice throated coping „	3	0	3
14 in. × 6 in. do. do. ... ... „	2	14	3
4½ in. × 9 in. Plinth rubbed on top and face ... „	2	8	6
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.	8	8	
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube	1	9	9
do. do. fair one edge for fair faced brickwork ... ... „	1	15	3
Hard York—			
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run	10	6	
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube	2	15	6
12 in. × 6 in. Plain Steps, rubbed top and front ... „	2	8	6
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.	9	9	
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.	3	8	6

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	19	0
Hand-made Pantiles Berkshire district	55	18	0
Hand-made Double Roman Bridgwater district	59	5	0
Hand-made 10½ × 6½ tiles Berkshire district	15	9	0
Machine-made 10½ × 6½ Staffordshire district	14	1	9
Hand-made Hip and Valley tiles per doz.	1	11	3
Machine-made Hip and Valley tiles do.	1	8	0
Concrete tiles 10½ × 6½	8	5	6
do. Interlocking (49S)	19	9	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.			
24 × 12	143	15	10
22 × 12	116	17	4
22 × 11	105	10	10
20 × 12	99	0	1
20 × 10	94	16	9
18 × 10	65	16	9
18 × 9	57	14	0
16 × 10	51	17	0
16 × 8	40	11	9

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—					
Joinery quality	Ex Wharf	per standard	£115 to £140		
Carcassing quality	do.	„	£97 to £102		
1 in. Tongued and Grooved Flooring	do.	„	£110	0	0
Hardwood—					
Mahogany —African S.E.	do.	per ft. cube	1	10	0
do. Honduras do.	do.	„	3	5	0
Oak European do.	do.	„	2	5	0
do. Japanese do.	do.	„	2	10	0
do. English Logs sawn	do.	„	1	17	6
Teak 8 in. average S.E.	do.	„	3	17	6
Walnut African Los sawn	do.	„	1	5	0

DOORS (in Lots I-II)

	£	s.	d.
Delivered London area.			
1½ in. 4 Horizontal Panel. Pattern 4 in. deal			
2 ft. 0 in. × 6 ft. 6 in. ... ... each	1	12	0
2 ft. 3 in. × 6 ft. 6 in. ... ... „	1	13	0
2 ft. 6 in. × 6 ft. 6 in. ... ... „	1	14	0
2 ft. 9 in. × 6 ft. 6 in. ... ... „	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... „	2	9	0
2 ft. 9 in. × 6 ft. 6 in. ... ... „	2	11	6
2 in. 2 Panel, top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... „	2	1	9
2 ft. 9 in. × 6 ft. 6 in. ... ... „	2	3	6

SUNDRIES

Delivered London area.			
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.	5	8	
1½ in. do. (67 yds. to 1 ton) ... ... „	7	4	
2 in. do. (52 yds. to 1 ton) ... ... „	8	11½	
2½ in. do. (45 yds. to 1 ton) ... ... „	10	3	
3 in. do. (39 yds. to 1 ton) ... ... „	11	5½	
Quantities under 1 ton add 1d. per ½ in. of thickness.			
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.	2	2	6
⅛ in. Hardboard do. ... ... „	2	1	6
5/16 in. do. do. ... ... „	3	2	6
⅜ in. Asbestos Flat Building Sheets ... ... per yd. sup.	3	8	
¼ in. do. ... ... „	4	10	
Roofing Felt, 1-ply ... ... „	1	9	
do. 2-ply ... ... „	2	2½	
Best Scotch Glue in slabs ... ... per ½ cwt.	5	0	0
do. pearl ... ... „	5	5	0
Croid Glue ... ... 28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots) ... ... per ton	70	10	0
do. 4 in. and up (1-ton lots) ... ... „	67	0	0
Wire Nails, 3 in. (4-cwt. lots) ... ... per cwt.	3	6	10
do. 4 in. and up (4-cwt. lots) ... ... „	3	6	3

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in., 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton	48	2	6
Extra for sizes			
3 in. × 1½ in. 4 in. × 1¾ in. ... ... „	3	10	0
3 in. × 3 in. ... ... „	2	10	0
4 in. × 3 in. ... ... „	2	5	0
10 in. × 4½ in. ... ... „	1	10	0
5 in. × 2½ in. 5 in. × 3 in. ... ... „	1	15	0
4½ in. × 1¾ in. ... ... „	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. „		15	0
6 in. × 3 in. 24 in. × 7⅛ in. ... ... „	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. 9 in. × 4 in. 10 in. × 5 in. ... ... „	1	5	0
12 in. × 5 in. 22 in. × 7 in. ... ... „	1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in. 14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. 15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. 16 in. × 8 in. 18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in. „		10	0
Steel angles average price ... ... „	50	5	0
Steel tees average price ... ... „	51	5	9
Fabricated work delivered London—			
R.S. Joists cut and fitted ... ... „	65	12	6
Compound girders ... ... „	71	15	0
Stanchions ... ... „	77	2	6
Compound stanchions ... ... „	81	10	0
In Roof Work—Trusses and Purlins ... ... „	94	15	0
Average prices not for awkward work.			
Angle cleats and ⅝ in., ¾ in. and ⅞ in. bolts average price London area ... ... per cwt.	5	7	6

FERRO-CONCRETE BARS

Mild Steel Ferro-Concrete bars British manufacture to BSS785 ex London Stock ⅝ in. diam., and upwards ... ... per ton	46	5	0
¼ in. diam. ... ... „ extra	8	12	0
5/16 in. do. ... ... „	6	12	0
⅜ in. do. ... ... „	4	12	0
½ in. do. ... ... „	3	2	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	Under 1 ton	Over 1 ton	W.I. Fittings	Malleable Fittings
Class A	+13¾%	+ 8¾%	Light +36%	Malleable List
Class B	+25⅛%	+20⅛%	Heavy +43¾%	−25%+40%
Class C	+44¼%	+39¼%		
Black—				
Class A	− 8¼%	−13½%	Light +22¾%	Malleable List
Class B	+ 4½%	− ¾%	Heavy +30¼%	− 25%
Class C	+19½%	+14¼%		

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/11½	3/6	1/-
3½ in.	4/3½	3/10	1/-
4in.	5/6½	4/4	1/6
4½in.	6/1½	4/10	1/10
5 in.	6/9½	5/3	—

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	5/1½	4/7	1/3
3½ in.	5/8½	4/7	1/6
4 in.	6/3½	4/10	1/10
4½ in.	6/9½	5/6	2/1
5 in.	7/5½	6/4	2/5

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	8/5½	4/4	6/3
2½ in.	8/5½	4/10	8/4
3 in.	9/6	6/–	9/–
3½ in.	10/9½	7/1	10/10
4 in.	12/6	8/7	12/10

L.C.C. Coated Soil Pipes

2 in.	9/7½	7/5	9/–
2½ in.	10/1½	8/3	11/3
3 in.	11/4½	9/–	13/4
3½ in.	12/8½	11/3	15/6
4 in.	14/5½	12/6	18/4

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 20% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

In 9-fts.

	cwt. qt. lb.	per yd.	Bends	Branches
4 in.	1 1 17	33/6	23/–	41/–
6 in.	2 0 1	49/2	61/3	98/–

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths	per yd.	4/3	4/6½	5/6	7/3½
Shoes	each	2/9	3/–	3/7	4/10
Single Branches	„	4/4	5/1	6/1	8/6
Bends square or obtuse	„	3/–	3/4	4/4	6/1
Swan Necks 4½ in. proj.	„	3/4	4/4	4/10	6/9
„ 6 in. „	„	3/7	4/4	5/5	7/3

Asbestos O.G. Gutters and Fittings

		4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	4/1	4/5½	5/4	6/4½
Drop ends	each	3/3	3/9	4/5	5/2
Stop ends	„	1/–	1/1	1/2	1/4
Angles	„	3/4	3/10	4/8	5/5
Nozzles	„	3/3	3/9	4/5	5/2
Union Clips	„	1/7	1/11	2/4	2/8

Asbestos Half-Round Gutters and Fittings

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	2/10	3/4½	3/5½	4/1	5/8
Drop ends	each	2/4	2/9	3/–	3/4	4/10
Stop ends	„	–/11	1/–	1/1	1/2	1/4
Angles	„	2/8	3/–	3/4	3/7	4/10
Nozzles	„	2/4	2/9	3/–	3/4	4/10
Union Clips	„	1/2	1/3	1/4	1/6	2/3

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	49 7 6
Mild Steel Bars	43 18 0
Mild Steel Hoops	44 2 6

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	58 2 6
24 gauge	60 12 6
26 gauge	63 12 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	66 10 0
24 gauge	70 0 0
26 gauge	75 5 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	68 0 0
24 gauge	71 10 0
26 gauge	76 15 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)		£ s. d.
Sheet BS 1740 S1C 18 SWG (36 in. wide)	per lb.	2 10½
Sheet BS 1470 NS3 Utility 18 SWG (36 in. wide)	„	2 8
Coiled strip BS 1470 S1C 18 SWG (24 in. wide)	„	2 9½
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide)	„	2 7½
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide)	„	3 0
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG	per sheet	1 12 0
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31½ in. × 20 SWG.	„	1 17 6
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31½ in. × 20 SWG	„	1 11 2
Extruded section BS 1476 E1C simple moulding	per lb.	2 8½
Extruded section BS 1476 E1C 1 in. diam. round	„	2 6
Extruded section BS 1476 HE1WP simple angle	„	2 11½
Extruded section BS 1476 HE10WP 1 in. diam. round	„	2 10½
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG	„	4 3½
Tubing BS 1471 HT10WP 1½ in. O/D × SWG	„	5 6½

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

M.O.H.

All per doz.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	87/–	128/8				
Toilet bib cocks for iron	109/–	158/5				
Screwdown stop cocks for iron	66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead	89/–	132/–	234/4	472/–	623/6	1389/6
Double nut boiler screws	18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves	77/–	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/–
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	33/–	40/8	59/6	92/5	118/10	155/3
Brass sleeves		31/11	31/11	56/2	74/10	91/5
	1¼ × 6 lb.		1½ × 6 lb.	2 × 7 lb.		3 × 7 lb.
Lead P. trap with brass cleaning screws	68/6		85/6	137/–		234/–
Lead S. trap do.	83/–		102/6	168/3		302/–

Solder	s. d.
Plumbers' 1 cwt. lots	351/– 14 lb. lots per lb. 3 6
Tinmen's	„ „ 427/– „ „ 4 1
Blow pipe	„ „ 430/– „ „ 4 3

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 27½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.	approx per ft. d.
½ in. × 19 gauge	14¾	42	11¼
¾ in. × 19 „	13	40½	15¾
1 in. × 18 „	11½	38½	24
1¼ in. × 18 „	10⅞	38½	29
1½ in. × 18 „	10⅜	38½	34¼
2 in. × 17 „	12½	39½	55¾

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... ... per ton £267 0 0

Zinc

		£ s. d.
Sheet Zinc 10 gauge (25 SWG)	5 cwt. lots upwards per cwt.	8 9 0
do. 12 gauge (23 SWG)	„ „	8 6 6
do. 14 gauge (21 SWG)	„ „	8 5 3

Brass Tubes

Brass tubes basic price, plus gauge and manufacturing extras ... ... per lb. 1 10

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	130 5 0
Lead Water Pipe in coils	„	132 10 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia.	„	134 0 0
„ over 4 in. dia.	„	136 0 0
Lead Gas or Untinned Compo pipe	„	134 0 0

Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	„	4 0
1 cwt. do. 3 cwt.	„	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £80 15s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

		£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site	per ton	8 2 3
do. White do. do.	„	8 11 9
Siripite Coarse do. do.	„	8 4 3
do. Fine do. do.	„	8 12 3
Blue Lias Lime in 6-ton loads	„	6 14 6
Hydrated Lime (Grey) do.	„	5 17 6
do. (White) do.	„	6 5 0
Lump Lime (Grey) do.	„	5 7 0
do. (White) do.	„	5 14 6
White Keen's or Parian Cement in 1-ton loads	„	11 11 9
Pink Keen's or Parian Cement in 1-ton loads	„	11 6 6
Granite Chips in 6-ton loads	„	2 10 1
Hair	per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site	per yd.	2 4
1,200 yds.	„	2 3½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site	„	3 0
1,200 yds.	„	2 11½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery Delivered site	„	2 7
1,200 yds.	„	2 6½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site	„	3 3
1,200 yds.	„	3 2½

PAINT AND DISTEMPER

		£ s. d.
Delivered London area		
Ceiling Distemper	per cwt.	1 7 6
Washable Distemper	,,	5 5 0
Gloss Paint	per gal.	2 12 0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3 11 0
LEAD PRODUCTS AND OILS		
Ground White Lead, in 1 cwt. kegs	per cwt.	8 18 3
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3 9 6
Genuine Red Lead, Dry, 1 cwt. keg.	per cwt.	6 2 0
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2 17 0
Size XD quality 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) drums extra	per gal.	18 6
Boiled Linseed Oil (5 gal.) do.	,,	19 0
SUNDRIES		
Turpentine substitute (5 gal.) drums extra	,,	5 6½
do. do. (40 gal.) do. do.	,,	4 10½
Solignum, Brown (5 gal. cans) Exterior	,,	8 4
Creosote (40 gal. barrels)	,,	2 0
Paste Powder (1 lb. packets)	per lb.	2 0
White Lining Paper	per piece	1 1

VARNISHES, etc.

Delivered London area		
Oak Varnish, Outside or Inside	per gal.	2 0 0
Oak Pale Copal do.	,,	2 0 0
Hard Drying Oak for Inside	,,	2 5 0
Crystal Paper Varnish do.	,,	2 8 0
Eggshell Flat Varnish do.	,,	2 6 0
Finest Carriage Varnish	,,	2 7 0
Front Door Varnish	,,	2 4 0
Japan Gold Size	,,	1 18 0
Black Japan	,,	1 16 0
Brunswick Black	,,	1 12 0
Berlin Black	,,	1 10 0
Terebene	,,	1 17 0
Knotting (1 gal. bottles free)...	,,	2 8 0
French and Brush Polish (do.)	,,	2 2 0

GLASS

	per ft. super s. d.
Delivered London area	
18 oz. Sheet Glass Ordinary Glazing Quality-Cut Sizes	7½
24 oz. ,, ,, ,, ,, ,, ,,	9½
26 oz. ,, ,, ,, ,, ,, ,,	1 0½
32 oz. ,, ,, ,, ,, ,, ,,	1 3½
¼ in. Rolled Plate	10½
7/16 in. and ½ in. Rough Cast	1 2½
⅛ in. Figured Rolled and Cathedral, Standard patterns : White Group 1	10½
do. Group 2	1 2
do. Standard Tints	1 8
do. Special Tints	3 4
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating Group 3	1 3½
¼ in. Wired Cast	1 3
¼ in. Georgian Wired Cast...	1 5½
Hollow Glass Blocks—	Each
P.B.2. 5½ × 5½ × 3⅞ in.	3 3
P.B.3 7½ × 7½ × 3⅞ in.	5 0
P.B.32 7½ × 7½ × 3⅞ in.	5 0
Radiused Corner Blocks to match up with—	
P.B.2	6 0
P.B.3	7 6
P.B.32	7 6
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 10
,, ,, ,, 5 ft. sup.	4 9
,, ,, ,, 45 ft. sup.	5 7
,, ,, ,, 100 ft. sup.	6 0
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	9 0
Not exceeding 180 ft. sup. or ditto	12 1
Not exceeding 200 ft. sup. or ditto.	17 2
Plates exceeding 200 ft. sup. prices on application.	
Substances other than ¼ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. ,, ,, ...	2,000	6½
26 oz. ,, ,, ...	2,000	8½
32 oz. ,, ,, ...	2,000	11½
¼ in. Rolled Plate	1,000	8½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White Group 1	1,000	8½
do. Group 2	1,000	10½
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte Group 3	1,000	11½
7/16 in. and ½ in. Rolled Plate or Rough Cast ...	2,000	1 0
¼ in. Wired Cast, Hexagonal	2,000	1 2
¼ in. Georgian Wired Cast	2,000	1 2½

The Builder

CURRENT RATES OF WAGES

AS FROM MAY 27, 1957. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1
Craftsmen	4/6	4/5½
Labourers	3/11½	3/11

Town.	*Grade.*
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A1
Accrington	A
Addlestone	A
Afan Valley	A
Aldeburgh	A1
Aldershot District	A1
Alfreton UD	A
Alnwick UD	A
Altrincham	A
Amble	A
Ambleside	A1
Amersham	A1
Ammanford	A
Andover	A1
Anglesey, Isle of	A1
Ardingly	A1
Arundel	A1
Ascot	A1
Ashbourne RD	A1
Ashbourne UD	A1
Ashby-de-la-Zouch UD	A
Ashby Woulds UD	A
Ashford (Kent)	A1
Ashford (Middlesex)	A
Ashington UD	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A1
Atherstone RD	A
Attleborough	A1
Axminster	A1
Aylesbury	A1
Aylsham	A1
Bagshot	A1
Bakewell UD	A1
Banbury	A1
Bangor	A
Barnard Castle UD	A
Barnoldswick UD	A
Barnsley CB	A
Barnstaple	A1
Barrow-in-Furness	A
Barrow-upon-Soar RD (part Thrussington)	A1
Barry	A
Basford RD (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley MB	A
Baxterley	A1
Beaconsfield District	A
Bearl	A
Beccles	A1
Bedale RD	A
Bedford	A
Bedlington	A
Bedlingtonshire UD	A
Bedwas	A
Beeston & Stapleford UD	A
Belper UD	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley MB	A
Bewdley MB	A
Bexhill-on-Sea	A1
Bideford	A1
Biggleswade	A1
Billericay	A
Billing	A
Billingham UD	A
Bilsthorpe	A
Bilston MB	A
Birchington	A1
Birkenhead	*
Birmingham CB	†A
Bishop Auckland UD	A
Bishop's Stortford	A
Bishops Castle MB	A1
Bispham	A
Blackburn	A
Blackpool	A
Blackwell RD	A
Blandford	A1
Blaydon UD	A
Blidworth	A
Blyth B.	A
Bodmin	A1
Bognor Regis	A1
Boldon UD	A
Bolsover UD	A
Bolton	A
Boston MB	A
Bourne End	A
Bournemouth District	A
Brackley MB	A1
Bracknell	A1
Bradford CB	A
Bradford-on-Avon	A1
Braintree	A1
Brandon & Byshottles UD	A
Brecon—Borough of	A1
Breconshire, County of ...	‡A1
Brent Knoll	A1
Brentwood	A
Bridgend	A
Bridlington MB	A
Bridlington RD	A1
Bridgnorth MB	A1
Bridgnorth RD	A1
Bridgwater	A1
Brierfield	A
Brighouse MB	A
Brighton & Hove	A
Bristol District	A
Broadstairs	A1
Bromsgrove UD	A
Broughton, Flint	A
Buckfastleigh	A1
Buckingham	A1
Buckley	A
Bungay	A1
Burnham-on-Crouch	A1
Burnham-on-Sea	A1
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Caernarvon	A1
Caernarvonshire, Cnty. of	‡A1
Calder Valley	A
Camberley District	A1
Cambridge	A
Cannock UD	A
Canterbury	A1
Cardiff	A
Cardiganshire, County of	‡A1
Carlisle	A

CURRENT RATES OF WAGES—Continued

Town.	Grade.
Carlton UD	A
Carmarthen—Borough of	A1
Carmarthenshire, Cnty of	‡A1
Carnforth	A
Castleford UD	A
Caterham	A
Chapel-en-le-Frith	A
Chard	A1
Charmy Down	A
Chatham District	A
Chatteris	A1
Cheadle (Staffs) RD	A
Chelmsford	A
Cheltenham	A
Chepstow	A
Chertsey	A
Chester	A
Chester-le-Street UD	A
Chesterfield MB	A
Chesterfield RD	A
Chichester	A1
Chipping Norton	A1
Chipping Sodbury	A1
Chippenham (inc. Chippenham Within and Hardenhuish)	A1
Chorley	A
Cirencester	A1
Clacton	A1
Clay Cross UD	A
Cleethorpes MB	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville UD	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett UD	A
Conway	A1
Corby UD	A
Cornwall, County of	‡A1
Corsham District	A
Coventry CB	A
Cranbrook	A1
Cranleigh	A1
Cranwell Aerodrome Site	A
Crawley	A1
Crewe	A
Crewkerne	A1
Cromer	A1
Crook and Willington UD	A
Crowborough	A1
Cuckfield	A1
Cwmbran	A
Dalton-in-Furness	A
Darlington CB	A
Dartmouth	A1
Darwen	A
Daventry MB	A1
Deal	A1
Denbigh Town	A1
Derby CB	A
Devizes	A1
Devon, County of	‡A1
Dewsbury CB	A
Didcot	A1
Diss	A1
Doncaster CB	A
Dorchester	A1
Dorking	A
Dorset, County of	A1
Dover	A1
Dovercourt	A
Driffield UD	A1
Drigg & Carleton	A
Droitwich MB	A
Dudley CB	A
Dunstable	A
Durham B	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A1
East Kesteven RD	A1
East Retford MB	A
Eastwood (Notts) UD	A
Ebbw Vale & District	A
Edenbridge	A1
Ely	A1
Epping	A
Evesham MB	A1
Exeter	A
Exmouth	A1
Fakenham	A1
Falmouth	A1
Fareham	A
Faversham	A1
Felixstowe	A1
Filey UD	A
Fleetwood	A
Flint MB	A
Folkestone	A1
Frinton	A1
Frome	A1
Gainsborough UD	A
Gateshead CB	A
Gillingham (Dorset)	A1
Gillingham (Kent)	A
Glastonbury & Street	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A1
Godalming	A1
Goole, MB	A
Goole RD (part—Airmyn, Hook)	A
Gosport	A
Grantham MB	A
Gravesend	A
Grays Thurrock UD Area	A
Great Yarmouth	A
Grimsby CB	A
Grimsby RD (part)	A1
Guildford District	A1
Halesowen MB	A
Halifax CB	A
Halstead	A1
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate MB	A
Hartlepool B	A
Harwell	A1
Harwich	A
Haslemere	A1
Hastings	A1
Hatfield (Herts)	A
Havant	A
Haywards Heath	A1
Heanor UD	A
Hemel Hempstead	A
Henley-on-Thames	A1
Hereford	A1
Herefordshire, Cnty. of	‡A1
Herne Bay	A1
Hertford	A
Hexham RD	A
Hexham UD	A
Heysham	A
Heywood	A
Higham Ferrers MB	A
High Wycombe	A
Hinckley UD	A
Hitchin	A
Hoddesdon	A
Holywell	A
Horley	A1
Hornсastle UD	A1
Horsham	A1
Horwich	A
Huddersfield CB	A
Hull	A
Hunstanton	A1
Huntingdon (Staffs)	A
Ilfracombe	A1
Ilkeston MB	A
Ilkley UD	A
Ipswich	A
Isle of Sheppey	A1
Isle of Thanet	A1
Isle of Wight	A1
Jarrow B	A
Keighley MB	A
Kendal	A
Kenilworth UD	A
Kettering MB	A
Keynsham	A
Kidderminster MB	A
Kingskerswell	A1
King's Lynn	A1
Kingsteignton	A1
Kirkham	A
Knaresborough UD	A
Knutsford	A
Lancaster	A
Leamington MB	A
Leatherhead	A
Leeds CB	A
Leek UD	A
Leicester CB	A
Leighton Buzzard	A1
Leiston	A1
Leominster	A1
Letchworth	A
Lewes	A1
Lichfield MB	A
Lincoln CB	A
Liskeard	A1
Littlehampton	A1
Liverpool	*
Llandudno	A1
Llanelly (incl. Llanelly RD)	A
Llanfairfechan	A1
Llangollen	A1
London	*
Long Eaton	A
Looe	A1
Loughborough MB	A
Louth MB	A1
Lowestoft	A
Loxton	A1
Ludlow MB	A1
Ludlow RD	A1
Luton	A
Lyme Regis	A1
Lyneham (Devon)	A1
Lytham	A
Macclesfield	A
Maidenhead	A
Maidstone	A
Maldon (Essex)	A1
Maltby UD	A
Malton UD	A
Malvern UD	A1
Manchester	A
Manningtree	A1
Mansfield MB	A
March	A1
Margate	A1
Market Harborough RD	A1
Market Harborough UD	A
Market Rasen UD	A1
Martock	A1
Maryport	A
Matlock UD	A
Melksham	A
Melton Mowbray UD	A1
Merionethshire	A1
Merthyr	A
Mexborough UD	A
Middlesbrough CB	A
Middleton	A
Middlewich	A
Mildenhall	A1
Milford Haven UD	A1
Minehead	A1
Monmouth—Borough of	A1
Monmouthshire	A1
Morecambe	A
Moreton Valence	A1
Morley	A
Morpeth B	A
Morpeth RD	A
Mundesley	A1
Nantwich	A
Neath & Valley	A
Nelson	A
Newark MB	A
Newbury	A1
Newcastle-on-Tyne CB	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A1
Newquay	A1
Newton Abbot	A1
Normanton UD	A
Northallerton District	A
Northallerton UD	A
Northampton CB	A
North Shields	A
North Walsham	A1
Northwich	A
Norton Radstock	A1
Norwich	A
Nottingham CB	A
Nuneaton MB	A
Oakham RD	A1
Oakham UD	A1
Okehampton	A1
Oldham	A
Ongar	A
Ormskirk	A
Ossett & Horbury	A
Oswestry	A1
Oundle UD	A1
Oxford	A
Oxted	A1
Padstow	A1
Paignton	A1
Par	A1
Pembrokeshire (except Milford Haven)	A1
Penmaenmawr	A1
Penrith UD	A1
Penzance	A1
Peterborough, Soke of (Eastern Regional portion)	A1
Petersfield	A1
Pickering	A
Plymouth	A
Pontefract MB	A
Pontypool & District	A
Pontypridd District	A
Porthcawl	A
Portishead	A
Portland Bill	A1
Portsmouth	A
Port Talbot	A
Preston	A
Princetown	A1
Pudsey MB	A
Pulborough	A1
Radnorshire, County of	‡A1
Ramsgate	A1
Raunds UD	A
Rayleigh	A
Reading	A
Redcar B	A
Redditch UD	A
Redhill & Reigate	A
Rhondda Valley	A
Richmond B (Yorks)	A
Ripon MB	A1
Rochdale	A
Rochester	A
Ross-on-Wye	A1
Rossendale Valley	A
Rotherham CB	A
Royston	A1
Rugby MB	A
Rugeley UD	A1
Rushden UD	A
Saffron Walden	A1
St. Albans	A
St. Austell	A1
St. Helens	A
St. Neots	A1
Salisbury City	A1
Salisbury Plain	A1
Sandy	A1
Sawbridgeworth	A
Saxmundham	A1
Scarborough MB	A
Scunthorpe MB	A
Seaford & Newhaven	A1
Selby UD	A
Sevenoaks	A
Shaftesbury	A1
Sheerness	A1
Sheffield MB	A
Shepton Mallet	A1
Sherborne	A1
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury MB	A
Sirhowy Valleys	A
Sittingbourne	A1
Skegness UD	A1
Skipton UD	A
Sleaford UD	A1
Slough, Windsor & Eton District	A
Smethwick CB	†A
Snettisham	A1
Solihull UD	A
Somerset, County of	‡A1
Southampton and Eastleigh	A
Southend-on-Sea Dist.	A
Southport	A
South Shields CB	A
Southwold	A1
Spalding UD	A1
Stafford MB	A
Staines	A
Stamford MB	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton RD	A
Stockton-on-Tees B.	A
Stoke-on-Trent CB	A
Stoke Orchard	A1
Stourbridge MB	A
Stourport UD	A
Stowmarket	A1
Stratford-on-Avon MB	A
Stroud (RD Area)	A1
Sunderland CB	A
Sunningdale	A1
Sutton Coldfield MB	A
Swadlincote UD	A
Swaffham	A1
Swanage District	A1
Swansea	A
Swindon District	A
Swinton UD	A
Tamworth MB	A
Taunton	A1
Tavistock	A1
Tenterden	A1
Teignmouth	A1
Tewkesbury	A1
Thames Haven	A
Thetford	A1
Thirsk RD	A
Thorpe Bay	A
Thurrock UDC Area	A
„ North of to Billericay	A
Tilbury	A
Todmorden MB	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Tring	A1
Trowbridge	A1
Truro	A1
Tunbridge Wells	A1
Tynemouth CB	A
Ulverston	A
Uppingham (Salop)	A1
Uttoxeter RD	A1
Uttoxeter UD	A1
Wakefield CB	A
Wakefield RD	A
Walsall CB	A
Wallsend B	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A1
Warrington	A
Warwick MB	A
Wednesbury MB	A
Wellingborough UD	A
Wellington UD	A
Wellington (Somerset)	A1
Wells (Norfolk)	A1
Wells (Somerset)	A1
Welwyn	A
Welwyn Gar. City	A
West Bromwich CB	A
Westbury	A1
Westcliff-on-Sea	A
Westerham	A1
West Hartlepool CB	A
Westmorland (except Kendal)	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth (including Portland Bill, excluding Portland Stoneyards)	A1
Whitby UD	A1
Whitby RD	A1
Whitehaven	A
Whitley & Monkseaton UD	A
Whitstable and District	A1
Wickford	A
Widnes	A
Wigan	A
Wigton	A1
Wilmslow	A
Wilts. County of	‡A1
Wimborne	A1
Wincanton	A1
Winchester	A1
Windermere	A1
Wisbech	A1
Witham	A1
Withernsea UD	A1
Woking	A1
Wokingham	A1
Wolverhampton CB	A
Wolverton District	A1
Woodbridge	A1
Woodhall Spa UD	A1
Woodstock	A1
Worcester CB	A
Workington	A
Worksop MB	A
Worthing	A1
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A1
Yate	A1
Yeovil Borough	A1
York CB	A
Ystalyfera	A

*For Birkenhead, Liverpool and London the rates are:—Craftsmen, 4s. 7½d.; Labourers, 4s. 1d. In the case of London the rate beyond the 12-mile radius is: Craftsmen, 4s. 7d.; Labourers, 4s. 0½d. †Plus 2d. per working day. ‡This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 3s. 7½d. per hour. Women engaged on work other than craft processes, 3s. 3½d. per hour.

For Building Trade Wages in Scotland see page 1152

NEWS IN BRIEF

Eastern Federation Visits Denmark

ON June 18 a party of 61 members of the Eastern Federation of Building Trades Employers left for Denmark for the Federation's fifth official visit abroad. The party, which includes members from 16 of the Federation's 36 local associations, is led by the president, Mr. R. E. Perrott, of Danbury. Copenhagen has been chosen as the centre and visits to building and civil engineering work have been arranged by Entreprenorforeningen (Danish Contractors' Association), with whom information on various matters has already been exchanged.

The Federation will be giving a dinner in honour of their Danish colleagues before leaving for home on June 27. This visit will add to the fund of technical information collected by the Federation in earlier visits to Sweden, Holland, Italy and Spain and will further strengthen the bond between members of the International Federation of Building and Public Works.

Estate Without Chimneys

What is claimed to be the first housing estate in the country where none of the houses has chimneys is the Meopham Estate, near Gravesend, where 40 houses are now nearing completion. All the houses on the estate are being provided with central heating by means of diesel-oil-burning boilers, situated in a special compartment in the garage, which also houses the oil-storage tank. The maximum cost of all-the-year-round hot water and central heating is estimated at £40 a year, using 20 gallons of fuel a week in winter and nine in summer for hot-water only. The estate has been designed by Mr. R. J. Billings and built by Grays Thurrock Properties, Ltd., builders. The Derby firm of Perkins C.M.E., Ltd., supplied the boilers.

Architectural Students Visit UAM Group

Fourth-year students from the School of Architecture at the Royal West of England Academy, Bristol, were the guests of the UAM Group at Watford on June 12 and 13. Accompanied by the principal of the school, Mr. E. Freeth, ARIBA, AADipl, FRSA, and the master, Mr. S. G. P. Macfarlane, ARIBA, AADipl, they were received by a director of the Universal Asbestos Manufacturing Co., Ltd., Mr. P. Talbot-Smith.

The primary purpose of the visit was to give the students practical knowledge of the characteristics of asbestos cement and of its versatility as a modern building material.

Thermal Insulation Costs

Mr. K. W. Fuller, manager of Thermalite, Ltd., referring to recent correspondence on thermal insulation costs, published in *The Builder*, comments on the figures given by Dr. Davidson in his reply to H. G. D. Yardley's letter in our issue of May 10. He states:—

'If the Egerton Standard for external walls is "U"=0.20, then the only loadbearing block used for inner leaf in a 10/11 in. composite cavity wall which will give this figure is, according to Nash and Broughton, aerated concrete Type B (their notation). This must be a high-pressure steam-cured block of density 50 lb./cu. ft. To the best of our knowledge the only block of this type commercially available in this country is that manufactured by this company.'

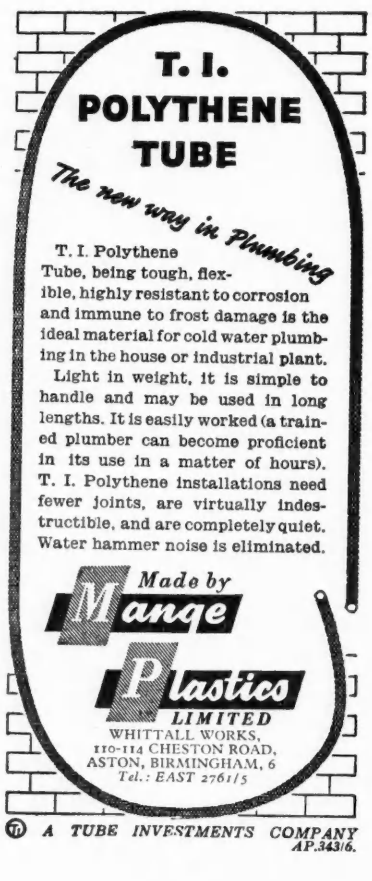
LMPA Year Book

The first issue of the London Master Plasterers' Association Year Book for 1956-7, published recently, contains much useful information on the trade including notes on the historical background of plastering, modern techniques, apprenticeship, names and addresses of members of the association, trade associations and trade unions.

The LMPA, which was founded in 1895, is affiliated to the LMBA and acts for the Master Plasterers of London as does the LMBA for the builders. The book is published for the association by Batiste Publications Ltd., 20 Bedford-street, WC2.

Cemian Motor Club

Winner of the Cemian Motor Club Competitive Social Run, held on May 26, was Mr. B. Norman in an Austin A40. Runner-up was Mr. K. Gregory in a Hillman Rapier. The next event is the President's Meeting at Wye on June 30. This is in the nature of a rally with special tests, the route being over country at very low average speed, finishing at the William Wells Hall, Wye, which is the Agricultural Branch of the College of Estate Management, where the principal and staff will entertain members to tea.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Federation Year Book

A useful work of reference to all sections of the building industry, 'The South Western Federation of Building Trades Employers' Year Book, 1957,' has just been issued. Included is up-to-date information on contracts, working rules, agreements and recommendations. Copies can be obtained from the Federation's offices at 22, Richmond Hill, Clifton, Bristol, 8.

Golfing Builders Beat Architects

The LMBA golfing society beat the RIBA by the odd match in 17 on June 11 at West Hill. In the top match Felix Wilson and H. Cullerne Pratt lost to F. R. Leadsom and P. H. Bates of the LMBA in the morning, but halved the afternoon foursome.

A Comprehensive Construction Service

John Laing and Son, Ltd., and the H. K. Ferguson Company of Great Britain, Ltd., announce that the two companies are forming a separate association in the name of Laing-Ferguson to provide a complete and comprehensive construction service to the chemical, processing, and manufacturing industries.

New General Secretary

Mr. J. W. Tiller, LIOB, has taken over from Mr. E. J. Murrell as general secretary of the Provident Institution of Builders' Foremen and Clerks of Works.

OXFORD ROADS TRAFFIC AND PARKING SURVEYS

Minister's Advice to City Council

MR. HENRY BROOKE, Minister of Housing and Local Government, advised Oxford City Council on June 6 to conduct an up-to-date traffic survey. In order to make the survey as comprehensive as possible he suggested that they should enlist the help of the Ministry of Transport and the Road Research Laboratory. At the same time they should also undertake a survey of parking facilities and parking regulations, availing themselves of similar advice.

The Minister made these suggestions after inviting representatives of Oxford City Council to a discussion at the Ministry, following the council's recent decision, by a considerable majority, that they were not prepared to put forward an inner relief-road scheme which had been outlined by Mr. Duncan Sandys when he was Minister of Housing and Local Government.

The deputation consisted of the Mayor, Alderman R. F. Knight, chairman of the Planning Committee, Councillor P. S. Spokes, Alderman L. T. Walker, and Councillors J. N. L. Baker, P. D. Bromley and M. Maclagan, who were accompanied by the town clerk, Mr. H. Plowman, and the city architect, Mr. E. G. Chandler, ARIBA.

Mr. Brooke said he was anxious, as he knew the council were, to reach a final decision on this problem as soon as possible, but he thought that up-to-date traffic information should be obtained as a first step before a further public inquiry was held. He urged the council in the meantime to press on with the development of the proposed shopping centre at Cowley; a compulsory purchase order for the land had just been confirmed.

TIMBER BUILDING MANUFACTURERS

Ministry's 'Unrealistic Attitude to Firm Price Tenders'

THE Timber Building Manufacturers' Association held their annual general meeting at the Café Royal, Regent-street, W1, on June 12. Mr. E. A. Busby, chairman of the governing council, presided. In presenting the annual report, MR. BUSBY referred to several matters which had arisen throughout the year to which the council had given active consideration.

On the question of import duty it was stated that in July, 1956, the council received notice that duty on 'certain components wholly or mainly of wood' had been reduced from 20 per cent. to 15 per cent. without there having been any prior consultation between the Association and the Ministry concerned. Following the council's protest it was established that the Ministry of Works (Building Industries and Materials Division) would, on future occasions involving trade and tariff negotiations, consult the Association on such matters.

The president went on to report that under present conditions it was unrealistic for the Ministry of Agriculture to call for firm prices for both materials and wages in connection with contracts that were to extend over a considerable period. They asked members to send to the secretariat full details of any contracts they received containing such a clause so that the matter could be discussed with the Ministry on the basis of specific tenders.

An important subject to which serious consideration had been given by the council was that of the proposed European Common Market, and in particular to the suggestion that, if this country joined a free trade area within the Common Market, they could expect the Scandinavian countries to seek membership also. The council was aware that exporters of prefabricated buildings from these countries would be faced with heavy freight charges, but members must not lose sight of the price advantage they would have for the members' basic product. The council hoped that members would take every opportunity of discussing this problem with their MPs. Duty free imports of timber buildings, it was emphasised, might, in certain circumstances, seriously affect the welfare of employers and employees alike.

The Wages Problem

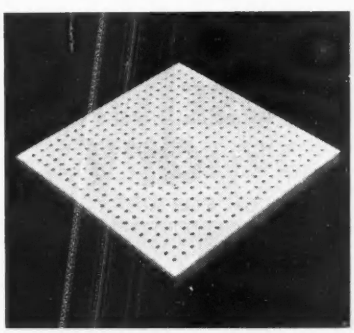
On the question of wages the council had viewed with concern the application from the employees for a further increase. In this respect they had written to Mr. van Westerborg, chairman of the Joinery and Woodwork Employers' Federation, assuring him of the Association's full support for any action his committee might be considering to withstand the employees' application, their view being that as wage rates were tied to the cost of living and an increase of 1d. per hour had already been given on that basis, the time was not appropriate for any further wage concessions.

MR. GEORGE W. GROSVENOR, president of the Association, in his address, referred to the increasing number of firms entering the timber building field—small, medium and, in some cases, large concerns. Many of the latters' primary interest, although based on timber, he said, had not been that of wood consumers heretofore. He went on to add that since the Association believed in freedom for all who possessed initiative, they could not complain about new people entering the field. 'We should do well to accept the added challenge as a test of our efficiency and wish our competitors well,' he said.

On the European Free Trade area proposals, Mr. Grosvenor said that these were of paramount interest to building manufacturers. It was, as yet, too early to assess the progress which had been made in carrying the idea to fruition but there might well be difficulties facing building manufacturers as a result of development of the free trade area scheme.

On wage increases Mr. Grosvenor stated that at the annual conference of the Amalgamated Society of Woodworkers, held the previous day, the advice of the union leaders had been disregarded and a resolution passed instructing the executive to seek a wage increase of 6d. an hour. 'This wage question,' he said, 'is a very serious one indeed.' There was no doubt that the building and ancillary trades must look at their economic standing, at their discipline, at their efficiency and at their future.

It was not only a matter of 6d. an hour, he added, but other things also being demanded at the moment—a three weeks' paid holiday, a shorter working week with no reduction of pay, a contributory pension scheme, and so forth. The Government, too, was concerned with creating a better standard of living within the framework of full employment and within the range permissible under growing foreign competition. The proposed setting-up by the Government of what he called a 'super national body' to examine the question could well be an important and progressive step in the industrial history of this country.



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OVERSEAS BUILDING

From Our Own Correspondents

CAMBODIA.—The Government of Cambodia have signed an agreement with the Soviet Union for the design and construction of a 500-bed hospital and outpatients' department at Pnompenh, the country's capital. This makes the fourth foreign power to be building in Cambodia, the others being France—constructing the country's first deep sea port at Kompong Som; the USA, building 140 miles of highway from this port through the jungle to the capital; and Japan, who are completing negotiations for the construction of a new town, a complete hill resort. It is also rumoured that the Chinese Republic are likely to build and equip four new factories on the instigation of a Royal Prince—now Prime Minister.

CHINESE REPUBLIC.—Peking claims to be constructing one of the world's largest civil airports, planned to handle 300 movements per day, and capable of taking the largest and fastest aircraft visualised in commercial use. The construction of the airport, to be known as Peking Central, was commenced in June 1955, and is reported as being now 80 per cent. complete. . . . The Provincial Government of Kwangtun have allocated 250,000 yuan (about $40,000) to buy building materials for strengthening the dykes along a 40-mile stretch of the North River. Engineers are now inspecting the damage caused by the recent heavy rains, and have requested this allocation as a first instalment.

HONG KONG.—A 17-storey building, estimated cost $3,800,000, is to be erected in Nathan-road, Kowloon, at the junction of Jordan-road. The ground floor and the first, second and third floors will be shopping arcades with about 100 shops. The fourth and fifth floors will provide about 40 offices for professional and business use, and the rest of the building will house about 180 apartments of various types. The promoters of the building are the Henry Fok Estates and the architect is Wong Cho Tong, of 9, Icehouse-street, Hong Kong. . . . . The So Uk estate for resettlement housing schemes now employs 150 workmen daily on the $1,895,618 site preparation contract, and the Government are proceeding with the drainage works at a cost of $333,863. The architectural work on this site has been apportioned between a consortium of architects working under the general direction of Eric Cumine, AADip, FRIBA, who will lay down standards of finish, etc. Messrs. Leigh & Orange will design the perimeter blocks along the Po On-road and Cheung Fat-street frontages, Mr. H. S. Luke the blocks to the north and two 24-classroom primary schools, Mr. W. Szeto the tower blocks on the mid-upper levels, and Chau & Lee the blocks on the highest sections of the site, which will include some better-type flats. . . . . The Boys' & Girls' Clubs Association plan to build a four-storey headquarters at Wanchai, at a cost of $450,000. The architect is G. D. Su, of the Wing On Life Building, Hong Kong, and the project is being promoted by the Rotary Club of Hong Kong. The building will provide accommodation

for the training of youth leaders, handicraft and club rooms for 200 children.

COMMONWEALTH BUILDING

FROM its many branches in various parts of the Commonwealth, Barclays Bank DCO reports the following building developments:

BAHAMAS.—There has been a sharp increase in building activity over last year. Permits issued during the first four months of 1957 totalled £998,126, an increase of 65 per cent. over the similar period last year.

NORTHERN RHODESIA.—A five-storey hotel to cost £200,000 is to be built in the centre of Kitwe. The ground floor will consist of a public bar and shops. OK Bazaars have purchased a half-acre site in Kitwe for £36,000 for their first store in N. Rhodesia, upon which they expect to spend over £100,000.

SIERRA LEONE.—The building trade continues to be active and building material is at all times in demand. Plans to the value of £700,000 have been approved by Government departments for the erection of new schools and offices.

SOUTH AFRICA.—From Durban comes a report that there is the possibility of the establishment of a new industrial area of 1,359 acres. Port Elizabeth City Council is also preparing to open a new industrial area of 488 acres.

TRINIDAD.—In Trinidad, nearly $10m. BWI is to be spent this year by the Ministry of Communications, Works and Public Utilities. Water schemes at four centres will cost $6m.; a new air terminal building at Piarco airport will cost $1.7m.; road projects $1.18m. and a new fish market and offices, $1,025m.

CONTRACTS OPEN

***Australia.**—The Geelong Harbour Trust Commissioners, Geelong, Victoria, have intimated that they require 'the supply of all plant, labour and materials and the due performance of all operations considered necessary by the engineer for the construction of a slipway approximately 632 ft. long of cast-in-situ and precast concrete beams on concrete capped timber piles, concrete retaining walls, apron and appurtenant works at Ripplesides, Geelong, but excluding stone beaching beyond slipway apron and the ten timber dolphins.' Bids should be sent to the above address. Closing date July 10. A copy of the tender documents including specifications and drawings is available for loan to UK firms in order of receipt of applications. (Ref. ESB/14546/57. Tel.: Chancery 4411, ext. 738 or 771.)

***South Africa.**—The Union Tender and Supplies Board have intimated that they require the supply *only* of prefabricated telephone exchange buildings, carrier equipment buildings, power plant buildings, filter huts, farm line exchange equipment huts, country electrician accommodation buildings, engineering yard buildings, garages, huts for carrier bypass equipment and lavatories. Bids should be sent to the Chairman, Union Tender & Supplies Board, 291, Bosman-st., PO Box 371, Pretoria, by July 4. (Ref. ESB/14454/57. Tel.: Chancery 4411, ext. 738 or 771.)

* From the Board of Trade Special Register Information Service. The telephone number and extension at the end of the paragraphs relate to the department of the Export Service Branch, Lacon House, Theobalds-road, WC1, where further information can be obtained.

The SCOTTISH BUILDER

Forth Road Bridge Start

WORK is expected to start on the Forth Road Bridge in April, 1958, and tenders will be invited in October next. This was announced at a meeting of the Forth Road Bridge Joint Board last week when Mr. Kenneth Anderson, of Mott, Hay and Anderson, the consultants, said that they were now engaged on drawings of the main structure. It is planned to start work on the foundations of the piers and the anchorages simultaneously from both sides of the river. New chairman of the Board is Mr. Ian Johnson-Gilbert. Mr. John Snedoon, convenor of the Fife County Council, has been appointed vice-chairman.

This information provides the first practical indication of a start on construction of a project which has been pressed over many years and delayed latterly, although approved, because of financial considerations. It will be located to the west of the existing railway bridge and will be of concrete construction. Earlier proposals included the construction of an underwater tube, located on piers across the bed of the river, but this proposal was later ruled out, for a variety of reasons, in favour of an overhead crossing. The bridge will provide the first link in a direct east-coast route which the Dundee authorities hope to see completed by the erection of a further road bridge across the Tay, for which proposals are now being actively developed. So far no authority has been granted for the start to a Tay crossing.

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SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from May 27, 1957. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen 4s. 6d.; Labourers 3s. 11½d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.*
		s. d.
1st	25	49 6
2nd	33⅓	66 0
3rd	50	99 0
4th	66⅔	132 0
5th	75	148 6

For female labour, the rates are:

	s. d.
Operatives on craft operations (at end of probationary period)	3 11½
Operatives on labouring operations (at end of probationary period) ..	.. 3 5½

Luxury House Villages for Dunblane

WEIR Housing Corporation are planning villages of luxury houses designed for the younger executives and business men who plan to escape from their working surroundings by locating in a rural setting. The first village has been planned for Ochlochy, Dunblane, where 45 houses have been planned. These two- and three-bedroom homes are planned to form a court or as semi-detached with communicating garages.

Brick and hardwoods will be used in the construction, and cost is estimated at between £3,000 and £6,000. Architects for the scheme are Graham Law and James Dunbar-Naismith.

Ratio of houses will be 3.5 to the acre. The site has been specially selected because of the proximity of Dunblane to Glasgow.

Multi-storey Flats for Paisley

PAISLEY TOWN COUNCIL is to go ahead with its plans to build multi-storey flats. Tenders will go out in September and a start is expected in early 1958. Burgh officials are to confer with the Scottish Special Housing Association on the possibility of the association building the flats. The Council have stated that the architectural design was the work of their own staff although they have been in collaboration with a firm of consulting engineers.

There will be six blocks of 15 storeys. One will be in the George-street - Canal-street development area, three at Foxbar in the south - west of the town, and two at Blackhall, one of the first post-war housing areas.

NEW BUILDINGS

Angus.—Plans approved by Montrose TC for the erection of 18 houses at Union-rd., Montrose. Cost, £19,000.

Angus.—Plans prepared by CC for major extensions to Beechhill Old People's Home. Est. cost £30,000. Early authority by Department of Health to proceed with this work promised.

Ayrshire.—National Coal Board, Ayr. Plans approved for the erection of new offices at Prestwick. Est. cost £112,000.

Perth.—Plans being prepared for crematorium at Huntingtower. Burgh S. John Penman, Tay-st.

Perthshire.—Plans in hand for 45 houses on the Ochlochy estate, Dunblane. A: Messrs. Law & Dunbar-Naismith, Edinburgh.

The Builder FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JUNE 25.

***†Smethwick CB.**—40 aged persons flats at Lyttelton Hall estate, West Bromwich. BE&S. Dep. £2 2s. Tenders by July 22.

JUNE 28.

***†Wandsworth MBC.**—12 flats at Portinscale-rd., Putney. TC.

JUNE 29.

***†Essex CC.**—Erection of Braintree County Sec. Sch. County A.

***†Essex CC.**—Erection of Ingatestone County Sec. Sch. County A.

†Northampton CB Education Com.—Extensions of 15,900 sq. ft., including gymnasium and practical rooms, to Spencer sec. mod. schools, Northampton. Ch. Education Officer.

***†Wolverhampton CB.**—Central Dental Clinic, Redhill-st. BE, Town Hall. Dep. £2 2s.

JULY 1.

***Ealing BC.**—Removal of galleries and replacement of Strip boarded flooring at Little Ealing schools. BS. Dep. £2.

***Flint BC.**—Erection of club premises at Trem Afon, Bagillt. BE&S. Dep. £1 1s.

JULY 2.

***†Bath City C.**—Erection of Cattle sale ring at Walcot-st. Cattle Market. City E. Dep. £2 2s.

***Brighton CB.**—Two blocks of four flats with houses attached at Waldron-ave. and Hawkhurst-rd., Parkside estate. Boro' S. E&Planning Officer, 26/30, King's-rd. Dep. £2 2s.

***†Selby UDC.**—10 dwellings adjoining Westbourne-gr. G. L. Thompson, FRIBA, 22, Park-st., Selby. Dep. £2 2s.

JULY 3.

Chadderton UDC.—Garage and maintenance depot. Cameron & Middleton, F/ARICS, 21, Queen-st., Oldham. Dep. £2 2s.

***Southend-on-Sea CB.**—Renewal of strip flooring to gymnasium at St. Bernard's high sch. for girls, Westcliff-on-Sea. Boro' A.

JULY 5.

***Wrexham BC.**—(a) 28 flats at Queen's Park: (b) 35 cycle sheds at Queen's Park South and Rhosnessney. BE&S. Dep. £2 2s. for (a) and £1 1s. for (b).

JULY 10.

***Berks CC.**—Brickwork shop at South Berks College of Further Education, Oxford-rd., Newbury. County A. Wilton House, Parkside-rd., Reading. Dep. £2 2s.

***†Portsmouth City C.**—(a) Erection of Magistrates' Courts and Boiler House, Civic Centre; (b) major extensions to Paulsgrove Sec. Mod. Schls. City A. Dep. £1 each.

JULY 11.

***Merthyr Tydfil CB.**—Erection of 225 houses at Gurnos Neighbourhood Unit. (Fixed price tender.) BE&S. £5 5s.

JULY 13.

St. Austell UDC.—(a) 24 traditional flats at Poltair housing site, St. Austell. (b) Eight garages at Poltair housing site, 13 garages at Eastbourne housing site, St. Austell, and seven garages at School Hill housing site, Mevagissey. E&S. £2 2s. each contract.

JULY 15.

***Irlam UDC.**—50 dwellings, Glaze estate, Cadishead. E&S. £2 2s.

***Macclesfield BC.**—Fixed price tenders invited for 14 bungalows at Hurdsfield, Housing Scheme 19. Boro' A. Dep. £2 2s.

Washington UDC.—36 two-storey flats and block of seven garages at Coach-rd. site. E&S. Dep. £2 2s.

JULY 17.

***Southend-on-Sea CB.**—Lavatory extensions at Richmond Avenue sch., Shoeburyness. Boro' A. Dep. £2.

JULY 18.

***Beckenham BC.**—42 single-bedroom flats in 5 three-storey blocks in Dorset-rd. BE&S. £2.

JULY 19.

Shrewsbury BC.—Crematorium, lodge and office at London-rd. Boro' S. Dep. £2 2s.

JULY 20.

***Newmarket UDC.**—12 houses at St. Wendred's-way, Exning. P. D. Lees, Architect, Council Offices, Severals House. Dep. £2 2s.

JULY 22.

Birmingham CC.—20 four-storey maisonettes at Mapledene-rd., Cranes Park estate, Sheldon. City A. Dep. £2 2s.

JULY 23.

***Frimley & Camberley UDC.**—Four shops with maisonettes over at Old Dean housing estate, Camberley. E&S.

***Ilford BC.**—8 old persons' flats and 6 houses at Horns-rd. estate. BE. Dep. £3 3s.

JULY 24.

***Chesterfield RDC.**—52 dwellings at Heath and 41 dwellings at Tupton. E. Rural Council House, Saltergate, Chesterfield. Dep. £2 2s. per contract.

NO DATE.

***Royal Tunbridge Wells BC.**—58 dwellings and one shop in 4 contracts at Sherwood Estate extension. BS & Waterworks E. Dep. £2 2s. each contract.

PAINTING, MATERIALS, ETC.

JUNE 28.

***†West Hartlepool CB.**—Installation of new heating and hot water system and alterations to existing heating system at the High School for Girls. Leonard Auton, DipArch, ARIBA, Regent-bldgs., Roker-st., York-rd., West Hartlepool.

JULY 2.

***Bath City C.**—Supply and erection of asbestos-clad tubular framed cattle shed and supply of cattle penning, etc. City E.

JULY 3.

***Esher UDC.**—Supply of materials for installation of hot water systems, etc., in 56 dwellings. E&S.

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JULY 8.

Ipswich CBC.—Road materials, etc. Boro' E&S.

JULY 10.

***Stoke Newington MBC.**—External painting of Oak House, 27-38, Lordship-gr., and Crawshay House. BE&S.

JULY 15.

***Worsley UDC.**—Electrical installations for 262 dwellings at Peel-estate, Little Hulton; 60 dwellings at Grosvenor-rd., Little Hulton; 38 dwellings at Wharton estate, Little Hulton, and 42 dwellings at Hill Top estate, Walkden. E&S.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

JUNE 25.

†States of Jersey.—Construction of sewers. Three contracts totalling over two miles of 18 in. to 54 in. dia. sewer. S. Averil Gothard, MICE, consultant engr., Public Health Offices, South Hill, St. Helier.

JULY 1.

Leven TC.—Roads and services at Broom housing site extension. Blyth & Blyth, M/MICE, Ccl's. constg. engrs., 135, George-st., Edinburgh. Dep. £3 3s.

JULY 2.

St. Albans CC.—1,178 lin. yd. of SW sewer, 15 in. to 9 in. dia., with precast concrete manholes, 533 lin. yd. precast concrete kerbing and 1,606 sq. yd. tarmacadam footway at Marshalwick-la. City E&S. Dep. £2 2s.

Wiltshire CC.—Improvement of 900 yd. of Melksham-Lyneham road, B.3102, at Sandridge. County S. Dep. £2.

JULY 5.

Bedfordshire CC.—Second carriageway, 24 ft. wide, on east side of existing London-Edinburgh-Thurso trunk road, A.1, from Girtford sidings bridge northwards for 1½ miles. County S. Dep. £2 2s.

Heston and Isleworth BC.—Widening and reconstruction of South-st., Isleworth. Boro' E. Dep. £2 2s.

JULY 8.

Brixworth RDC.—4,200 lin. yd. of 9 in. and 6 in. dia. concrete and glazed stoneware sewers, manholes and house connections and reconstruction of sewage disposal works for main drainage of Boughton parish. Pick, Everard, Keay & Gimson, engrs., 6, Millstone-la., Leicester. Dep. £2 2s.

Burton-upon-Trent CBC.—1,450 yd. of concrete SW and combined sewers, 15 in. to 31 in. dia., with manholes, etc., at Winshill. Boro' S.

Depwade RDC.—Pumping station and lime softening and treatment works, etc., at Rushall waterworks. A. P. I. Cotterell & Son, engrs., 54, Victoria-st., SW1. Dep. £3 3s.

Hereford City C.—4,858 yd. of 6 in. to 12 in. dia. asbestos-cement and CI water mains, Holmer main water works. City S & WE. Dep. £2 2s.

Lancashire CC.—Widening Liverpool-Warrington road, A.562, and provision of dual 24 ft. carriageways with footpaths for distance of 830 yd. westwards from Penketh-la. Ends, Great Sankey, and lengthening of Haltons bridge over Whittle Brook for distance of 30 ft. by 14 ft. span r.c. deck on mass-concrete abutments. County S and Bridgemaster. Dep. £5.

JULY 9.

Glanford Brigg RDC. — Contract No. 1: 400 lin. yd. of 9 in. dia. and 3,800 lin. yd. of 6 in. dia. concrete S.G.W. sewers, with precast concrete manholes, 2,400 lin. yd. of 6 in. dia. spun-iron rising mains, pumping station and sewage disposal works at Hibaldstow.—Contract No. 2: Duplicate 150 gallons per minute sewage pumps and complete installation. John H. Haiste & Ptnrs., Ccl's. constg. engrs., 20, Wood-la., Headingley, Leeds, 6. Dep. £3 3s. each contract.

JULY 15.

Bradfield RDC. — Burghfield drainage — sewage treatment works. John Taylor & Sons, engrs., Artillery-hse., Artillery-row, Victoria-st., SW7. Dep. £5.

JULY 16.

Tiverton RDC.—435 lin. yd. of 15 in. and 4 in. dia. spun-iron pipes, 3,055 lin. yd. of 15 in. to 6 in. dia. stoneware sewers, concrete manholes, pumping station and sewage disposal works at Willand. Harvey McGill & Hayes, Ccl's. constg. engrs., 8, Richmond-rd., Exeter. Dep. £5.

JULY 17.

Grantham BC.—Contract A.—Reconstruction of Mowbeck culvert and Grange sewer, comprising 1,200 yd. of r.c. culvert 12 ft. to 9 ft. wide and 4 ft. 6 in. high, mostly in situ, with 2,800 yd. of concrete pipe sewer, 48 in. to 21 in. dia., property demolition and other works. Contract B.—Regrading, widening and improvement of Mowbeck stream for 1,100 yd. Pick, Everard, Keay & Gimson, engrs., 6, Millstone-la., Leicester. Dep. (A) £5 5s.; (B) £2 2s.

JULY 22.

East Retford BC.—700 yd. of carriageway and 900 yd. of foul and SW sewers, etc. Boro' E & WE.

GENERAL BUILDING WORK

(LONDON)

Ealing.—FLATS.—BC proposes to build 27 flats in three three-storey blocks at the Lime Trees estate, Northolt. The Boro' E&S is C. W. Seddon, MInstCE, MIMunE.

Kensington.—FLATS AND HOUSES.—Plans have been submitted to the LCC for the development of the seven-acre site west of Abbotsbury-rd., Holland Park, by 170 dwellings, including a six-storey block of flats and a number of terraced houses with gardens and built-in garages which it is proposed to group around four quadrangles. The developers are the Rockmead Property Co., Ltd., and the architect is William J. Biggs (L), of Stone, Toms and Ptnrs., 28, South Audley-st., W1. Wates, Ltd., are the general contractors.

Leyton.—SCHOOL EXTENSIONS.—Essex CC proposes to include in 1958-59 programme the following projects: extensions to provide 120 places at Manor county secondary girls' school, provisionally estimated to cost £21,500—and extensions to provide 60 places at Connaught county secondary girls' school, provisionally estimated to cost £25,000, and (on the Reserve List) extensions to Nortington county secondary boys' school, £30,000 (provisional).

Leyton.—REDEVELOPMENT.—The Minister of Housing and Local Government has approved a scheme for the redevelopment of Crescent-rd., Junction-rd. and part of Church-rd. by an eleven-storey block of flats and blocks of three- and four-storey flats and maisonettes, comprising 249 dwelings in all, with 55 garages. The estimated cost of the scheme is between £660,000 and £750,000. The Boro' E&S is H. D. Peake, MSc(Eng), AMICE.

Romford.—SCHOOLS.—Essex CC proposes to include the following projects in 1958-59 programme: completion of Lodge-la. county secondary school (300 places), £79,596; Collier-row RC primary school (280 places), £47,432.

Waltham Holy Cross.—SCHOOL.—Essex CC has submitted to Ministry of Education a proposal for the inclusion in 1958-59 programme (Reserve List) of the completion of King Harold county secondary school (270 places), estimated to cost £88,687.

Walthamstow.—SCHOOL EXTENSIONS.—Essex CC proposes to include in 1958-59 programme the following school extension projects: Chapel End county secondary school (240 places), £75,000; Winn's-ave. county secondary school (450 places), £120,000; Willowfield county secondary school (150 places), £50,000, and, on the Reserve List, Sir George Monoux grammar school, £26,000. The above estimates are provisional.

Westminster.—APPOINTMENT.—The Housing Com. recommends that C. E. Ball & Ptnrs., 36-38, Fitzroy-sq., W1, be appointed quantity surveyors and R. Travers Morgan & Ptnrs., 11, Victoria-st., SW1, consulting (structural) engineers for the Berwick-st.—Hopkins-ct. housing scheme.

Westminster.—HOUSING SCHEME.—The Housing Com. has given preliminary consideration to the type of accommodation to be provided at the Hide-pl., Vincent-st., Regency-st., Chapter-st., and Esterbrook-st. housing site and has concluded that a preponderance of small flats, including bed-sitting room flats suitable for old people, is desirable, but recommends that the Council should direct that a bathroom and water closet should be provided in each dwelling.

(PROVINCIAL)

Ashton-under-Lyne.—H. Broadbent & Sons, Ltd., propose erection of new foundry and engineering works at Cavendish-st.—Plans submitted to BC:—32 houses at Everest-ave. for A. V. M. Deane; extensions to workshop at John-st. for C. M. Coote, Ltd.

Bedale.—North Riding CC is recommended by Health Com. to build regional occupational centre for retarded children at Bedale.

Bradford.—MH&LG approved proposals for new home for 60 aged and sick people adjoining existing home at Shirley Manor, Wyke, £60,000 est. City A: William C. Brown (A), AMTPI.

Bridgwater.—Next instalment of RDC's house building programme consists of: eight single-bedroomed bungalows at Mill-la., Cannington; two two-bedroomed bungalows at East Huntspill; four houses and four single-bedroomed bungalows at West Huntspill: 18 houses and two two-bedroomed bungalows at 'Verriers' site, North Petherton and four houses each at Othery, Thurloxton, and Woolavington. Remainder of 1957 programme, which has been provisionally approved, provides for further houses at Cannington (8), Chedzoy (6), North Newton (4), Northmoor Green (4), Over Stowey (4), Puriton (8), and West Zoyland (2).

Bristol.—New six-storey office block proposed at junction High-st./Nicholas-st. for Commercial Union Assurance Co., Ltd. A: Alec. F. French & Ptnrs. (F/L), Halifax-hse., St. Augustine's-parade, Bristol, 1.

Bury.—Manchester TC proposes erection of 1,000 houses for overspill at Unsworth.

Buxton.—Manchester Regional Hospital Bd. approved extensions to outpatients' dept. at Buxton Hospital.

Cambridge.—New hostel for 40 undergraduates is proposed as addition to existing Clare College hostel, Chesterton-la., £80,000 est. A: David Roberts (F), University of Cambridge, School of Architecture, 1, Scroope-terr., Cambridge.

Darlington.—Newcastle Regional Hospital Bd. has approved plan to build premature baby unit at Greenbank Maternity Hospital. Bd's. Ch. A: P. H. Knighton, MBE (A), Benfield-rd., Newcastle-on-Tyne.

Drayton.—RDC to acquire sites at Wistanswick and Marchamley for housing purposes.

Dunstable.—BC and Beds. CC approved plan for new civic centre to be built on 34 acres of open land behind municipal offices, Grove-hse. Scheme includes College of Further Education, on which start expected this year, council offices (£200,000 est.), library, court house, concert hall, fire station and ambulance depot, with several shops along main road frontage. Total est. cost £1 million. Boro' E&S: R. F. Carrington, MIMunE, AMTPI.

Essex.—EC submitted following lists of projects to MofE to form main and reserve school building programmes for 1958-59:

Colchester, Monkwick county sec. sch. (510 places), £148,104; Colchester, North-East Essex county technical sch. (adaptations and extensions), £41,000 (P); Colchester, Royal grammar sch. (extensions, 120 places), £20,000 (P); Chelmsford, Westlands county sec. sch. (510 places), £148,104; Stansted county sec. sch. (340 places), £98,736; Braintree, John Bunyan county jun. sch.—extensions (160 places), £17,000 (P); Chelmsford, Westlands county jun. sch.—completion (240 places), £46,208; Fyfield sch.—extensions, £57,000 (P); Billericay, Sunnymede county jun. sch. (completion—240 places), £44,208; Rayleigh, Eastwood-rd. county jun. sch. (320 places), £54,208; Canvey Island county sec. sch. (extensions—270 places), £85,000 (P); Basildon Lee Chapel South county jun. sch. (320 places), £54,208; Basildon Lee Chapel South county infants' sch. (250 places), £42,350; Wickford county sec. sch. (completion—210 places), £45,907; Hockley county sec. sch. (instalment—340 places), £111,425; Chadwell, Herringham county jun. sch. (320 places), £54,208; Harold Wood county jun. (transfer) (320 places), £54,208; Hornchurch, Cranham county sec. sch. (510 places), £148,104; Shenfield county tech. sch. (782 places), £236,000 (P); Thurrock, Corringham county sec. sch. (510 places), £148,104; Harold Wood RC grammar sch. (612 places), £177,725; Epping CofE (Controlled) sec. sch. (instalment—340 places), £106,145; Loughton, The Brook sec. sch. (extensions—180 places), £75,000 (P); Harlow, Hare-st./Little Parndon, No. 3 county jun. sch. (completion—240 places), £44,208; Harlow, Hare-st./Little Parndon, No. 3 county infants' sch. (250 places), £42,350; Harlow, Tye Green North county sec. (M/T) sch. (1,024 places), £308,000 (P); Gt. Parndon No. 1 county infants' sch. (250 places), £42,350; Chigwell, West Hatch county tech. sch. (completion—300 places), £66,429; Elmbridge Camp sch. (extensions), £30,000 (P).

Reserve list: West Horndon CP sch. (200 places), £42,000; Stanford-le-Hope North county jun. sch. (320 places), £54,208; Thurrock, Stifford Clays county sec. sch. (510 places), £148,104.

Gross cost of projects marked (P) is provisional only at this stage.

Glossop.—Kennings, Ltd., propose erection of new petrol station, repair and showroom depot.

Gosport.—HC proposes one two-storey block of eight flats and one three-storey block of 12 flats at Rowner No. 3 housing estate, 72 flats in four three-storey blocks at Rowner No. 2 estate and 56 flats in three four-storey blocks on land at rear of Corporation depot at Wilmott-la., all of one-bedroomed type, also 30 four-bedroomed houses at Turner-ave., Rowner No. 2 estate. Com. investigating 'new tradition' types of dwellings for these purposes.

Guisborough.—North Riding CC has approved scheme to build complete ambulance depot and station. County A, County Hall, Northallerton.

Halesowen.—Ansells Brewery Co., Ltd., propose extensions to "Black Horse" at Illey.

Hebburn.—UDC to develop land at Hedworth-la. for 1,500 houses. S: R. C. Bestow.

Keswick.—Hope & Davidson (L/L), 21, Station-rd., are A for new kitchen and dining-room at Keswick School, for the Governors.

Kirkby.—Lancs CC proposes erection of new clinic and welfare centre at Richard Hesketh-dr. and Oatlands-rd., Huyton.

Kirkby.—UDC proposes conversion of Kirkby Hall to form new council offices.—Liverpool City C proposes erection of multi-storey tower block of flats, 110 ft. high, at Wignals Plantation, Southdene.

Kirkham.—UDC proposes 10 or 12 houses at Swarbrick-st.

Lancs.—CC proposes erection of new school clinics and child welfare centres at Crompton, Great Harwood, Pedgate, Penwortham, Poulton le Fylde, Bacup and Ramsbottom, £10,000 each est.

Lichfield.—Birmingham TC to erect 1,200 houses for overspill in Trent Valley area.

Liverpool.—Regional Hospital Bd. seeks Ministry approval for Stage 2 of alterations to maternity unit at Walton Hospital, £73,783 est.

Macclesfield.—TC received Ministry approval for layout of crematorium at cemetery.

Mansfield.—BC to prepare plans for further 50 dwellings.—BC proposes establishment of industrial estate at Southwell-rd. West.—Plans submitted to BC:—Addition to office at 36, White Hart-st. for W. G. Boaler & Son, Ltd.; additions to factory at Botany-ave. for Mansfields Hosiery Mills, Ltd.; additions to shop premises at Stockwell Gate for Mansfield, Sutton and District Co-operative Socy., Ltd.; additions to offices at Murray-st. for Johnson & Johnson, Ltd.; new store to bakery at Oxford-st. for W. J. Brookes & Sons, Ltd.

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Middlesbrough.—Plans are being prepared by Corporation architects for crematorium to cost £60,000/£80,000.

Morley.—TC approved erection of 48 three-storey flats at Slack-sq.

Nantwich.—Cheshire CC proposes purchase and alteration of Club Union Convalescent Home, Audlem-rd., £20,000 est.

Newcastle-on-Tyne.—Following decision to make Newcastle the centre for North-East College of Advanced Technology, it is proposed to revise plans for city technical college now being built in Ellison-pl. by Leslie & Co., Ltd., of Darlington, and to erect larger building to include hostel.

Nottingham.—TC proposes erection of 50 four-bedroomed houses at Bestwood Park estate; to prepare plans for further phase of extensions to public abattoir. Propose following in 1958/9 programme:—New premises for school for the deaf; completion of comprehensive sch. at Clifton; erection of jun. sch. No. 2 at Bestwood Park; new sec. sch. at Ransom-rd.; extensions and alterations at Claremonth sec. sch. for boys; new premises for Guildford sec. sch. at Dark-la.; new premises for St. Catherine's RC grammar sch. and extensions and alterations at South Wilford C of E prim. sch.

St. Helens.—Liverpool Regional Hospital Bd. proposes improvements, including new operating theatre block, at St. Helens' Hospital.

Sedgefield.—RDC has approved layout of land at Durham-rd. for houses. A: Tarren & Caller (A/A), Sedgefield.

Somerset.—M of E approved following projects in 1958-59 school building programme:—Taunton mod. sch. (£108,785); Bridgwater Sydenham sec. sch. (£108,785); Street sec. mod. (£101,376); Yeovil Preston sec. mod. (£108,785); Keynsham county prim. (£47,432); and extensions at Midsomer Norton grammar sch. (£35,000). Ministry also agreed that Woolavington sec. mod. sch. should become reserve programme item (£149,854).

South Shields.—TC approved layout plans for 18 bungalows at Horsley Hill-rd. Plans to be prepared for 88 houses at Marsden Camp to include roads and sewers. Boro' E&S: J. Reid.

Stafford.—English Electric Co., Ltd., propose extensions on 4-acre site at Forebridge, nr. Stafford.—Lord Stafford proposes erection of private houses on approaches to Stafford Castle.

Stockton.—RDC has approved building of 18 houses and four bungalows at Stillington. —TC approved proposal of Ideal Builders, Ltd., Stockton, to build houses and bungalows at Darlington Bank-la.—Approval has been given to Mrs. A. H. Goldsbrough, Garden Cottage, New Bewley, Stockton, to build garage, petrol station, refreshment room and two houses at New Bewley.

Stretford.—BC approved layout for development of Elsinore-rd./Skerton-rd. site by block of flats.—Plans submitted to BC:—Houses on Edge House Farm site for Albert Wallwork, Ltd., Chorlton; reconstruction of chancel, chapel and vestries at St. Peter's Church, Chester-rd., for PCC; extensions to form store at Queen-st. for Capsules, Ltd.

Sunderland.—Former YMCA building at Fawcett-st. is to be converted into shops and dance hall. A: J. Seymour Harris & Ptnrs. (F/F), 4, Greenfield-cres., Birmingham 15.—S. J. Stephenson, Gillis & Ptnrs., Saville-chbrs., North-st., Newcastle-on-Tyne, are A for proposed two-storey shop premises at Holmeside.

Sunderland.—Plans approved for by-law and TP purposes:—10 houses at High Barnes estate for I. Smith. A: Wm. & T. R. Mitburn (A/A). 18, Fawcett-st.; 70 houses on vacant site south of Outer Ring-rd., Tunstall Red House estate, for Wm. Leech (Builders), Ltd.; self-service store and warehouse for Sunderland Equitable and Industrial Socy., Ltd. A: R. C. Steel (A), 89, Osborne-ave., Jesmond, Newcastle upon Tyne; eight houses with garages at Chester-rd. for M. Nunn. A: Geo. T. Brown & Son (F/A), 53, Fawcett-st.

Sunderland.—TC is to obtain expert advice on its £250,000 scheme for abattoir at Fulwell. Boro' A: H. C. Bishop (A), Grange-hse., Stockton-rd., Sunderland. QS: T. H. Rae, 5, Belford-terr., Sunderland.

Sunderland.—River Wear Commissioners approved part development scheme to cost £200,000 and to include new cranes and deep water berths for large tankers.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Bedford.—17 houses at Putnoe estate, Area F, for BC. ‡W. J. Bushby, Ltd. £26,156.

Birkenhead.—New RC church at Holy Cross, Gautby-rd. *Lloyd & Cross, Ltd., Argyle-st., Birkenhead.

Birmingham.—St. Thomas's C of E sec. mixed sch. in Bath-row redevelopment area is to be rebuilt and renamed Lea Mason C of E sec. mod. sch., £167,000 est. City A: A. G. Sheppard Fidler (F), AMTPI.

Bootle.—106 dwellings at Park-la. estate, Netherton, for TC. *Lloyd & Cross, Ltd., Argyle-st., Birkenhead.

Burton-on-Trent.—New premises for Renold Chains, Ltd. *Thos. Lowe & Sons, Ltd., Curzon-st., Stoke-on-Trent.

Cheltenham. — 20 maisonettes, Lynworth estate, for BC. Boro' S: G. Gould Marsland, MBE, MICE. *Costelloe & Kemple, Ltd., "Bramery," Alstone-la., Cheltenham, Glos. £34,586.

Chingford.—32 flats at Ainslie Wood-rd., for BC. A: Booth, Ledeboer & Pinckheard. QS: Wakeman, Trower & Ptnrs. *Hale Construction Co., Ltd., Tottenham Hale, N.17. £47,400.

Coseley.—118 houses, flats and shops at Wallbrook site, for UDC. *J. Webb & Co., Ltd., 1, Ivy House-la., Coseley.—24 flats at Parkfield West site. *Building & Equipment (Sedgley), Ltd., Wolverhampton.

Hoole, Cheshire.—New church for Congregational Authorities. *Henry Jones & Son, Holt, Wrexham.

Hove.—40 flats at Hangleton-rd. for BC. Boro' E&S. *Stone & Son (Bldrs.), Ltd., 51, West-way, Hove, 4. £42,359.

Lambeth.—Six flats on site of 59, Knowle-rd., SW9, and six flats on site of 81, Sudbourne-rd., SW2, for MBC. ‡F. J. Moreton & Son, Ltd. £28,139 (reduced tender).

London (Air Ministry).—New works contracts to value of £500 or over for two weeks ended June 14:—

Building work: Heywood, Lancs., A. & J. Seddon, Ltd., Little Hulton, Walkden, Manchester; Carlisle, Cumberland, Micheal Thompson, Ltd., St. Ninians-rd., Upper By, Carlisle; West Freugh, Wigtownshire, J. Brown & Son, 20, Belleville-rd., Stranraer, Wigtownshire; Hartlebury, Worcs., J. Houston, Ltd., Blakemere-hse., Blakemere, Herefordshire; Ely, Cambs., Johnson & Bailey, Ltd., 51, Norfolk-st., Cambridge; Marham, Norfolk, William Sindall, Ltd., Gloucester-st., Cambridge. *Preparation and Maintenance of land*: Stafford and Warwickshire, Jack Branch, Winfold-rd., Waterbeach, Cambs. *Artificers' work*: Shawbury, Shropshire, Ball & Robinson, Trent Bridge Works, Stoke-on-Trent; Hornchurch, Essex, Spelman Bros., Ltd., 125, Eastern-ave., Ilford, Essex.

London (British Railways).—Recent contracts placed by North-Eastern Region:—York Wagon Works: brake assembly and test pits, F. Shepherd & Son, Ltd., York.—Bradford Valley Goods: covering by turnerised process roof, etc., of wool warehouse, Turnerised Roofing Co., Ltd., Saunders-st., SE11.—Gateshead Greensfield Motive Power Depot: electrical installation, S. H. Heywood & Co., Ltd., Manchester.—Stourton Motive Power Depot: electrical installation, S. H. Heywood & Co., Ltd., Manchester.

London (British Railways).—Contracts placed by Southern Region:—

St. Leonards (West Marina): New platform roofing and improvements, Taylor Woodrow Construction, Ltd., Southall Middx.—Egham station: Renovations, Caffin & Co., Ltd., WC2. —Rainham to Newington: Widening of the line, John Laing & Son, Ltd., NW7.—Waddon Marsh: New staff accommodation, Truett & Steel, Ltd., Thornton Heath, Surrey.—Upper Warlingham, Succombs Hill bridge: Reconstruction, Caffin & Co., Ltd., WC2.—Tilbury-Gravesend ferry: Enlarging pontoon and repairs to dolphins and Town Pier, Harland & Wolff, Ltd., E16.—Appledore, Kenardington bridge: Reconstruction, Mears Bros. (Contractors), Ltd., SE26.—Ewell West station: Renovations, Caffin & Co., Ltd., WC2.—Eastleigh locomotive works: New staff accommodation, G. E. Prince & Son, Ltd., Southampton, Hants.—Newhaven harbour: New cargo shed, central heating installation, hot water services and ventilation, F. Hayden & Sons, Ltd., Tunbridge Wells, Kent.

¶London (MofW).—Contracts placed for week ended June 1:—

Bedfordshire: Ministry of Supply, storage depot, Elstow, re-felting roofs, Cambridge Asphalte Co., Ltd., Swann-rd., Cambridge. *Buckinghamshire*: Hurworth-hse., Slough, extension to biochemistry laboratory, W. Hartley & Sons (Wexham), Ltd., Wexham, Slough. *Derbyshire*: Post Office sorting office, Swadlincote, erection, Gee Walker & Slater, Ltd., Uttoxeter Old-rd., Derby. *Essex*: Tye Green, Branch Post Office, Harlow, fitting out existing shell, Helmer & Dyer, Ltd., High Wych, Sawbridgeworth, Herts. *Glamorganshire*: Head Post Office, Cardiff, alterations and extensions, E. J. Smith & Co., 43, James-st., Cardiff. *Kent*: Department of Scientific and Industrial Research, Ditton Laboratory, East Malling, conversion of ship's hold into cold stores, offices and library, J. A. Davison & Son (Builders), Ltd., West Malling, Kent. *Lancashire*: Post Office, Vulcan-st., Liverpool, new mechanical transport workshop, Worthingtons (Contrs.), Ltd., 81, Shaw-st., Liverpool. *London*: Telephone Exchange, Wimbledon, SW19, erection of extension, E. Gostling (Builders), Ltd., St. Clare Works, Holly-rd., Hampton Hill, Middlesex; Cornwall-hse., Stamford-st., SE1, internal decorations, J. W. Green (Painters), Ltd., 171, Graham-rd., SW19; Great Westminster and Stanley Houses, Horseferry-rd., SW1, internal decorations, F. Troy & Co., Ltd., Frognal, Hampstead, NW3. *Middlesex*: Howard Telephone Exchange, High-st., Ponders End, erection of extension and ancillary works, Whyatt (Builders), Ltd., 225, Streatham High-rd., SW16. *Northumberland*: Jointly Occupied Building, Broadway West, Gosforth, felt roofing, Magnus Flooring Asphalte Co., Ltd., Sandyford-sq., Sandyford-rd., Newcastle, 2.

Contracts placed for week ended June 8:—

Gloucestershire: Standard Match Factory, Hempsted, alterations for Post Office motor transport garage, workshop and stores, W. J. B. Halls, Ltd., Barton Gates, Gloucester. *Huntingdonshire*: Ministry of Food Buffer Depot, The Airfield, Kimbolton, internal painting of one hangar and two Romney huts, W. T. Pickering & Sons, Ltd., 19, Watford-heath, Watford, Herts. *Lanarkshire*: Telephone Exchange, Barlock-st., Possil, Glasgow, N2, erection of extension, J. McGlasham & Sons, Ltd., 60,

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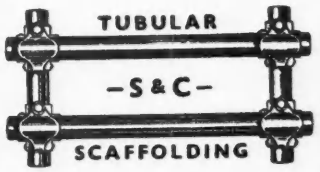

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London (War Dept.).—Works contracts placed for week ended June 7:—

Cheshire: Painting and decorating, Alfred Bagnall & Sons, Ltd., Shipley. *Co. Down*: Miscellaneous, R. D. Pollock & Co., Ltd., Bangor (Co. Down). *Hampshire*: Painting and decorating, M. A. Appleton (Contrs.), Ltd., Wolverhampton; building, Charles F. Cull, Ltd., Guildford; building, G. Kemp Stroud & Co., Ltd., Aldershot; roadwork, Wainwright Paving & Contracting Co., Ltd., Richmond, Surrey. *Lancashire*: Building, J. H. Donaldson & Co., Salford. *Shropshire*: Painting and decorating, N. S. Long, Ltd., Shrewsbury. *Surrey*: Building, A. & J. Simmons, Ltd., Woking. *Wiltshire*: Building, A. J. Dunning & Sons (Weyhill), Ltd., Andover; roofing sheds, Manchester Slate Co., Ltd., London; building, F. Rendell & Sons, Ltd., Devizes. *Worcestershire*: Miscellaneous, A. H. Guest, Ltd., Stourbridge; electrical, F. G. & R. Huband, Evesham.

Nuneaton.—Extensions to factory at King Edward-rd., for Clarkson (Engineers), Ltd. *Randall & Sons, Hartshill, Nuneaton.

Peterlee.—135 houses at Acre Rigg III, for DC. *J. Twiname, Ltd., Allerdale-hse., Brigham, Cockermouth.

Rushden.—20 houses and one block of flats on Hayden-rd. site, for UDC. E&S: Alexander Miller. *F. & R. Windsor, Ltd., Newton-rd., Rushden. £37,284.

Sheffield.—Extensions to chemistry building at Sheffield University. *W. J. Simms, Son & Cooke, Ltd., Haydn-rd., Nottingham.

Southampton. — 10 three-storey shops on bombed sites of 23-41 London-rd. for Norwich Union Insurance Socy. A: W. H. Saunders & Son (L/A), 1, Carlton-cres., Southampton. QS: C. A. McPherson & Ptnrs., Foundry-la., Southampton. *Brazier & Son, Ltd. £70,000 to £80,000 (est.).

South Shields.—Piling in River Tyne at launching berths of J. Readhead & Sons' shipyard. *J. G. Thompson & Sons, Ltd., Fowler-st., South Shields.

Stourbridge.—Alterations and extensions to bus garage at St. John's-rd., for Birmingham and Midland Motor Omnibus Co., Ltd. *A. H. Guest, Ltd., Coalbourne Brook, Stourbridge.

Tipton.—8-storey block of flats and 4-storey block of flats with shops (54 dwellings in all) at High-st. for BC, Boro' E&S: H. M. Woodward, MIMunE. *Wates, Ltd. £127,814.

Tipton.—84 dwellings at High-st., for BC. *Wates, Ltd., London. £127,800.

West Bromwich.—New licensed premises at Hollyhedge-rd., for Mitchells & Butlers, Ltd. *Rock & Downes, Ltd., Walsall-rd., Aldridge.

Woodcote, Oxon.—Extensions and refectory at The Oratory school, for Board of Governors, The Oratory School Assn. A: Poulton & Freeman (F/F), 6a, Wyndham-pl., Bryanston-sq., W1. QS: Ernest R. Babbs & Sons (F), 187, Piccadilly, W1. *J. M. Jones & Sons, Ltd., Maidenhead.

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